NMFS Email to ALWTRT on
Status of Maine Exemption Proposal
October 29, 2008

STATUS OF MAINE EXEMPTION PROPOSAL:
Based on discussions at the 2008 TRT meeting, NMFS formed a balanced Maine work group to consider discussions related to a possible sinking groundline exemption. NMFS convened the ALWTRT Maine Working Group on July 16, 2008 [see Attachment 1 below], to discuss Maine's exemption proposal and after the meeting distributed a survey questionnaire to further explore areas of agreement and disagreement. Based on the mixed responses from the questionnaire [see Attachment 2 below], lack of a clear path forward and challenges associated with a lack of data, Maine Department of Marine Fisheries (Maine DMR) decided not to continue its pursuit of an exemption to the sinking groundline requirement. Consequently, Maine DMR withdrew its exemption proposal. Maine DMR noted that they will continue to work with NMFS to fill in the data gaps to assist future discussions with the ALWTRT on vertical lines.

The questions and comments of the Maine Working Group highlighted some of the challenges ahead. These issues (e.g. data limitation and uncertainties) are not unique to Maine and will need to be addressed more broadly with NMFS and the ALWTRT in the future to further vertical line risk reduction. Please take some time to review the attached documents before the next ALWTRT meeting.

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Atlantic Large Whale Take Reduction Team – Maine Subgroup Meeting
July 16, 2008
Portland, Maine

Background

NMFS opened the meeting by reminding the subgroup of the discussions at the full meeting of the Atlantic Large Whale Take Reduction Team (ALWTRT) in April/May. Maine had submitted a proposal at that meeting to allow the use of low profile groundline for trap/pot gear in exchange for reductions in vertical lines. Over the course of the ALWTRT meeting, the proposal was modified in an attempt to address concerns and questions from ALWTRT members. Ultimately, the ALWTRT did not endorse the concept of low profile line. The ALWTRT provided conceptual support for further exploration of a proposal from Maine which would allow floating groundline in some areas in exchange for significant reductions in vertical lines. Following the meeting, based upon the best available information, NMFS determined that any floating groundline areas within Maine waters must be limited to Maine state waters east of Pemaquid Point (i.e., Lobster Management Zones A – D). It was decided that a subgroup was needed in order to have sufficient time to fully examine and understand the data supporting the proposal as well as all of the various aspects of the proposal including gear marking, monitoring, enforcement, and the contingency plan to ensure that the proposal afforded adequate conservation benefits to large whales.

The members of the Subgroup are listed in Attachment One and the meeting agenda is provided in Attachment Two.

Proposed Extension

NMFS acknowledged the proposed rule which, if finalized, would extend the effective date of the prohibition on the use of floating groundline for trap/pot gear in the Atlantic from October 5, 2008, to April 5, 2009. NMFS stated that the rationale for the proposed extension was identified in the proposed rule and was not linked to this proposal from Maine, or any of the proposals presented at the ALWTRT meeting. Subgroup members asked many questions about what would happen if there was significant agreement around a proposal from Maine and the April date was approaching. NMFS said it would not speculate on any future scenario but reiterated that the reasons for the delay were not linked to the Maine proposal and that the effective date now was October 5, 2008. A final decision on the proposed extension to April 5, 2009 would be made after the comments submitted were reviewed and considered.

NMFS Guidance to Subgroup

NMFS asked the Subgroup to focus discussions in a step-wise manner focusing on the following: 1) understand the underlying data in the Maine proposal, consider any limitations, decide whether to accept the baseline data, and discuss any alternative data sets; 2) understand the gains and losses between the Maine proposal and the ALWTRP

final rule; 3) discuss whether the trade-off is significant enough; and 4) if a comfort level is reached, consider whether the proposal can be implemented (e.g. consider gear marking, monitoring, contingency plan). NMFS referred to the nine questions to consider for potential exemptions which were distributed by NMFS at the ALWTRT meeting, as well as an additional document developed by NMFS following the April 2008 ALWTRT meeting in order to expand upon one of the questions and obtain additional information to assess the proposal. NMFS acknowledged that the Maine proposal was formatted consistent with this guidance. NMFS also clarified that if any trade-off proposal was supported by the ALWTRT and NMFS, that once NMFS had all the needed information it would take a minimum of one year to conduct rulemaking to modify the Atlantic Large Whale Take Reduction Plan (ALWTRP).

The Maine Proposal

In preparation for the meeting, Maine provided the Subgroup members with a proposal (Attachment Three). In summary, Maine proposed that floating groundline be allowed for trap/pot gear in an area identified as the "sliver area" which is the area between the ALWTRP exempted waters and the state water boundary in Lobster Zones A, B, C, and D. To offset any additional risk posed by the use of floating groundline in these areas, there would be a ban on single traps, a 300 endline cap, and a 10 fathom maximum groundline length between traps. In their calculations, their proposal would result in a 9-18% reduction in line in the water compared to the federal rule. Maine clarified that they determined that floating groundline was needed in this area of rocky bottom and extreme high tides due to operational issues, including hang-downs and gear loss, as well as abrasion factors.

Data

Much of the discussion focused around the data used to analyze the conservation benefits of the proposal. Maine had used a survey conducted in 2006 of Maine fishermen who hold both federal and state lobster permits to establish the baseline data. They acknowledged that the survey was not designed to answer a number of the specific questions being asked, but noted that in their opinion it represented the best available data. They had attempted to verify the data through analyzing sea sampling data and also reviewing gear configurations with fishing industry representatives during a series of meetings along the coast. From the baseline, Maine calculated two possible scenarios of compliance with their proposed endline cap – one where fishermen would change their gear configuration and the other where fishermen would change the number of traps fished. They noted that they had recently conducted another survey focused on state only permitted lobstermen and also that as of January of this year they had implemented a log book system that would randomly sample 10% of the permit holders in Maine. The data from the state only permitted lobstermen has not yet been analyzed. The log books at this time, however, do not collect data on gear configuration so cannot be used to compare against the 2006 survey results.

Most subgroup participants ultimately decided that they were not comfortable that the subsample of the federal permit holders by zones necessarily or accurately represented the fishing patterns of the state only permit holders fishing in the specific sliver areas. Specifically, the subgroup noted that the survey focused on a small subset of the fishermen that are both Federal and state permitted. The state only permitted vessels account for the vast majority of the vessels permitted and the survey did not sample the state only permitted vessels. Secondly, results are available only by zone so are not at a small enough scale to examine just the sliver areas. Concern was also expressed about a number of assumptions made in the analysis (e.g. everyone fishes 800 traps, used gear configuration from most heavily fished month, calculated length of endlines by taking 20 random points in the sliver of each zone and averaging the depth). Given this level of discomfort, many members did not accept the calculations made using these data. Some suggestions were made as to how the data could be analyzed differently, including the suggestion that it be analyzed by month rather than using only the heaviest fished month and including sampling errors/bounds around the data. However, the general consensus from the conservation and scientific subgroup members was that there were so many uncertainties with the data that there was little value in attempting to analyze it further. Some members suggested that if a trade off was much more significant, in the range of 25-50%, their tolerance for the uncertainties around the data would be much higher. Some members also suggested that, to evaluate reductions of line in the water column, more reliable data must be collected on fishing effort, particularly with regard to gear configurations (i.e., the number of traps fished per endline) and the number of endlines fished by area and by season.

The Scope and Goal

The Maine proposal was focused on the relatively small sliver areas in state waters of Zones A, B, C and D. Maine explained that their goal was limited to doing what was necessary in vertical line risk reduction in order to obtain the ability to use floating groundline in these areas. They stated their understanding of NMFS' position that a greater than 1:1 exchange was necessary and their proposal offered an additional conservation benefit of 9-18%.

Subgroup members representing conservation organizations and the scientific community expressed disappointment at the narrow scope of the Maine proposal. They stated that, while they did not support allowing the use of floating line in larger areas, they need to see vertical line reductions in larger areas. Some members were specifically looking for a commitment to risk reduction in exempted waters, including bans on singles and end line caps in the exempted waters rather then just the sliver. Other members were more concerned about the area between the sliver and the 50 fathom depth contour. They also did not support a narrow proposal focused just on vertical line risk reduction to get back the use of floating groundline. They stated that they were looking for a much more significant reduction in vertical line risk reduction in a holistic proposal covering all of Maine's waters. They suggested that Maine could be

a leader in this area, and many indicated support for some of these holistic ideas that Maine put forward toward the end of the April/May ALWTRT meeting.

The Trade-Off

The Subgroup acknowledged that risk reduction calculations were very difficult to make and even more difficult to compare across scenarios given available data on gear configurations and fishing effort. The scientific members of the subgroup noted that risk is composed of a number of factors including gear density, whale density and other factors we don't completely understand including whale behavior in different water depths and bottom types.

Some members of the Subgroup expressed significant concern over attempting to trade-off risk reduction between vertical and groundline. Basically, concern was over the fact that we don't know enough about the risk associated with these different components of the gear and the current gear configurations being fished to quantify their relative risk. In the absence of that information, Maine had used a mile of line as a common currency to compare risk reduction between vertical and groundline based on a 2006 survey of gear configurations used by individuals having both a Federal and a state permit. In their proposal, they considered that the more line removed from the water column, the greater the risk reduction would be. It also was assumed that entanglement risks in endlines and groundlines were equal (i.e., 1 mile of groundline posed the same risk as one mile of endline). Some subgroup members expressed significant concern with these assumptions, but did not have a suggested alternative weighting. They suggested that you could only compare within a gear component – so a reduction in vertical line represented a reduced risk from the vertical line baseline and a reduction in groundline represented a reduced risk from the groundline baseline. They were reluctant to make any judgments about the overall risk reduction achieved if one increased the amount of one type of line while reducing the amount of the other. This represents a significant obstacle for the subgroup as the core of the Maine proposal is an increased risk from groundlines (by allowing floating groundline). Since complete removal of sinking groundline is the baseline in these areas (as required by the recent amendment to the ALWTRP),the only alternative to compensate for allowing continued use of floating groundline would be a requirement for removing an equal or greater amount of vertical line (e.g., through gear configuration changes or effort reduction), or by a combination of reducing groundline lengths (e.g., limiting maximum line length between traps or requiring partial use of sinking line) and endline reduction.

Maine is concerned with the ability to quantify any type of conservation benefit or credit when considering groundline risk reduction in exempted waters - areas that were determined risk averse in the recently amended ALWTRP. Regarding reductions in vertical lines, Maine expressed concern about quantifying how much additional reduction in endlines would be needed to offset the need for floating groundline beyond the 1:1 length ratio between the two. They felt that some sort of target must be provided by the subgroup to help guide Maine in discussions with its industry. Without

some sort of benchmark, Maine felt that their industry would feel as though they were working with a moving target. If subgroup members are not willing to consider trade-offs between groundline and vertical line, the risk reduction trade-offs for the Maine proposal are limited to making groundline reduction in currently exempted areas. Some members suggested achieving a 25-50% reduction in line. If this alternative were to be pursued, subgroup members would have to accept that risk was being increased in some areas (the sliver areas) and reduced in other areas (exempted waters).

Holistic Proposal

Members of the subgroup representing the conservation and scientific community advocated for a holistic proposal that addressed risk in all of Maine's waters and significantly advanced vertical line risk reduction. When Maine brought their proposal forward, it was to serve as a focused trade-off: an endline cap, singles ban, unique marking and maximum groundline length in return for retaining floating groundline in the sliver area only. Maine expressed concern in taking significant additional action to reduce risk from vertical line. They stated that they understood that the ALWTRT was focusing on vertical line next and if Maine took action now it could place them at a significant disadvantage when and if the ALWTRT decided that additional vertical line risk reduction was necessary. They stated that if they were to consider taking additional action to reduce risk from vertical line they would need assurances and some sort of target in terms of percent reductions of endlines from the conservation and scientific communities in order to adequately discuss the endline/groundline tradeoffs with their industry.

The subgroup discussed three different forms such assurances could take: credit to be applied to the vertical line discussion; a contingency plan; or a grace period of 5 or more years. The idea of credit to be applied later was not possible to implement since it required quantifying the reduction Maine would implement in a common currency that could be applied to some future unspecified vertical line risk reduction action. At this time it is not clear what that common currency or risk reduction action relative to vertical lines might be. The concept that Maine would not be required to take further risk reduction action until and unless it's marked gear was identified on or taken off an entangled whale seems simple, but again is difficult to implement given all of the possible scenarios, including the fact that such a significant amount of line would need to be removed to demonstrate its origin, that this might not be possible. It was stated that given the assumptions and uncertainties underlying any proposal (including adequate documentation of gear configurations, limited reporting of effort and lack of understanding of latent effort), it was important to have robust data gathering to collect data on fishing effort (including gear configurations) and whale entanglement and a solid contingency plan so that if we are wrong (i.e. an entanglement occurs in groundline) we can quickly do a course correction. Many subgroup members found the last option of a grace period of 5 or more years as the least problematic in terms of implementation, but that its acceptance would depend on the proposal and the

reliability of the supporting information and analyses. No agreement was reached on the concept or the appropriate time period. One member pointed out that the NMFS has an obligation to revise reasonable and prudent alternatives to jeopardy if the measures in place do not appear to reduce risk. As such the agency may not be able to make such a commitment for a "grace" period. Regarding the benchmark for the endline/groundline tradeoffs, the subgroup discussed a range of 25% to 50% additional endline reductions beyond the 1:1 ratio between the addition of floating groundline and reduction in endlines. As noted above, some members of the group also noted that, in any case, it would be essential to collect better information on gear configuration and fishing effort.

Various Subgroup members seemed to have specific elements in mind that they viewed as essential to any holistic proposal for risk reduction in Maine waters in order to consider the allowance of floating groundline in Maine's sliver waters. There was not sufficient time to identify and discuss all of these components. It was agreed that NMFS would attempt to identify these through further communication with the various Subgroup members. NMFS also made time available at the end of the meeting for any public comments, but none were received.

Attachment One: Subgroup Members and Participants
Attachment Two: Subgroup Meeting Agenda
Attachment Three: Maine Proposal

Attachment One

Subgroup Members

Trap/Pot & Gillnet:
Stevie Robbins (represented at July 16th meeting by Dave Cousens)
Patrice McCarron

State Resources Managers:
Claire McBane
Dan McKiernan
Terry Stockwell

Federal Government:
Diane Borggaard (NMFS also represented by Mary Colligan and Dave Gouveia)
David Laist

Cons/Env Groups:
Vicki Cornish
Mason Weinrich
Sharon Young

Academic/Scientific:
Scott Kraus (represented at July 16th meeting by Amy Knowlton)
Stormy Mayo
Jooke Robbins (unable to attend July 16th meeting)

Subgroup Participants

Dr. Richard Pace (NMFS NEFSC)
John Higgins (NMFS NERO)
Major John Fetterman (Maine DMR)
John Williamson (The Ocean Conservancy)
Kristy Long (NMFS HQ)
Neal Etre (Industrial Economics, Inc.)
Sarah Cotnoir (Maine DMR)
Erin Summers (Maine DMR)

Attachment Two

Atlantic Large Whale Take Reduction Team
Maine Subgroup Meeting
July 16, 2008
Eastland Park Hotel
Portland, ME

DRAFT AGENDA

Meeting Purpose:
Discuss the State of Maine's proposal for an area specific sinking groundline exemption.

Meeting Framework:
This working group will assist the State of Maine in the development of a sinking groundline exemption proposal within specified Maine waters. The subgroup will review and provide constructive feedback to the State of Maine on their proposal in order to ensure that the goals and objectives of the ALWTRP are maintained should an exemption from the sinking groundline requirement be considered by the full ALWTRT and ultimately, NMFS. Based upon the best available information, any sinking groundline exemption proposal within Maine waters must be limited to Maine state waters east of Pemaquid Pt. (i.e. Lobster Zones A-D). NMFS anticipates holding at least two working groups meetings before referring any proposal to the full ALWTRT for consideration.

9:00-9:30AM	**WELCOME, INTRODUCTIONS AND GETTING ORGANIZED** *(NMFS)* ▪ Review meeting purpose and round robin greeting ▪ Opening comments ▪ Review and confirm agenda and ground rules
9:30-12:00PM (WITH BREAK)	**PRESENTATION AND DISCUSSION OF MAINE PROPOSAL** *(NMFS and Working Group)* *Objective: Provide framework and consider Maine proposal.* ▪ NMFS provides context for discussions *(NMFS)* ▪ Maine provides overview of proposal *(Maine DMR)* ▪ Discussion of proposal (*NMFS and Working Group*)

12:00-1:00PM	**LUNCH**

1-4:30 PM (WITH BREAK)	**CONTINUATION OF MORNING DISCUSSIONS**
4:30-4:45PM	**NEXT STEPS** *(NMFS)* ▪ Recap of meeting and review next steps ▪ Discuss next Working Group meeting (if needed) – Recommended dates and locations? – Other issues?
4:45-5:00	**OPPORTUNITY FOR NON-TRT MEMBERS TO COMMENT**
5:00	**ADJOURN**

Maine Sinking Groundline Exemption Proposal

Submitted to the Atlantic Large Whale Take Reduction Team

Prepared by Terry Stockwell and Erin Summers
Maine Department of Marine Resources

July 9, 2008

Table of Contents

I. Executive Summary…….3

II. Questions to Have Considered……3

III. Conservation Benefit……..……..……...7

IV. Conservation Benefit – Calculation Methods……9

V. Results and Discussion……...12

VI. Conclusion……..……13

VII. References Cited…….14

VIII. Tables and Figures…….15

Questions to Have Considered

Executive Summary:

The State of Maine proposes to exempt the sliver waters, defined as the waters between the amended Atlantic Large Whale Take Reduction Plan (ALWTRP) exemption line and the state waters boundary, of Lobster Zones A-D from the universal sinking groundline requirement. The conservation equivalency components of this proposal will result in a net reduction of rope in the water column by capping the numbers of endlines in this area at 300 and banning the fishing of single traps. This proposal will achieve a significant conservation benefit by removing 25-32% of the rope from this area, equaling 6053 to7808 miles of rope. Maine's proposal will also limit the length of floating groundlines in this proposed exemption area to 10 fathoms and requires a mandatory two foot mark in the center of the line to assist in enforcement and monitoring of the exemption.

Rationale:

This is an area specific proposal for Downeast Maine which is characterized by rocky habitat, extreme bottom currents, an infrequent occurrence of strategic stock whales and low plankton abundance. Fishing with sink rope groundlines in these areas will result in frequent hang downs, safety concerns and may result in unnecessary economic hardships.

The near-shore Coast of Maine is characterized by the widespread occurrence of rocky and broken bottom that lobstermen fish year round. In 1996, the Maine Geological Survey compiled existing side scan sonar, seismic reflection and bottom grab samples to form a surficial geology map of the Coast of Maine. All Maine lobster management zones have a combined 48% of the area classified as "predominantly rock" and/or 52% of the area containing rock (Barnhardt et al. 1996) (Table 1, Figure 1 A and B). Throughout the Atlantic Large Whale Take Reduction Plan (ALWTRP) rule making process, the Maine Department of Marine Resources (DMR), Maine Lobstermen's Association (MLA), Downeast Lobstermen's Association (DELA) and many Maine lobstermen consistently commented that flotation is needed in groundlines to operationally fish this rocky/tidal habitat.

What separates Downeast Maine from other areas of the Maine coast is not an increased occurrence of rocky substrate but rather increased tidal flows and strong bottom currents. Tidal heights in Downeast Maine are significantly greater than in Southern Maine peaking at 22 feet, compared to only 10 feet in Southern Maine (www.maineboats.com/tide-charts). More frequent contact between the line and the bottom eventually abrades the groundline as it rubs back and forth on rocks and hard bottom making it operationally difficult to fish.

Similarly, the bottom current measured along the coast of Downeast Maine are significantly stronger than those measured in Southern Maine. The Gulf of Maine Ocean Observing System (GOMOOS) maintains a buoy array measuring current velocity at

50M depth at several cites in the Gulf of Maine. A comparison of current speeds measured at the Western Maine shelf (Buoy B) and the Eastern Maine shelf (Buoy I) from January through June 2008 indicate the Western Maine shelf current speed at .1m/s or lower, while the current speed at the Eastern Maine shelf was consistently greater than .25 spiking at greater than .5 m/s (www.gomoos.org). Preliminary work conducted by the Gulf of Maine Lobster Foundation (GOMLF) suggests that the current profile off Jonesport, Maine is consistent from the surface to 1 m off the bottom (Figures 2 and 3). This result corresponds to the CTD data that was presented at the April 2008 ALWTRT (Stockwell 2008) that indicated that the bottom mixed layer at many stations in the Downeast region were largely non-existent. The small bottom boundary layer result in the reduction of the arc height of floating groundlines by dragging groundlines down and indicates a well mixed water column that provides a physical barrier to concentrate zooplankton at any depth.

Plankton data collected in 2007 confirm the current observation by suggesting that the area proposed for exemption to the sinking groundline rule is not a good source of long term habitat for large whale species. While there are significant regional differences in the abundance of copepods, and more specifically *Calanus* species, none of the maximum levels recorded in the three regions of the Coast of Maine were high enough to support feeding when compared to published values for areas where whales typically forage (Baumgartner and Mate 2003; Wishner *et al* 1988; Beardsley *et al* 1996).

The Maine lobster industry is primarily an inshore fishery, with more than 75% of license holders limited to fishing within Maine state waters. Approximately 85% of Maine lobster gear is fished as singles, pairs, or triples (21% singles, 56% pairs, 7% triples). The amended ALWTRP universal mandate for sinking groundlines will likely result in a dramatic increase in the number of endlines fished in Downeast Maine waters due to the difficultly these lobstermen will face in fishing sinking groundline. Rather than risk a high rate of gear loss and the safety risk associated with hauling rope that is compromised or hung down, many lobstermen will reconfigure their gear from triples and pairs to single traps. The unintended consequence of the amended ALWTRP and resultant gear reconfiguration would likely be a significant increase of risk to whales from endlines.

Areas:

The State of Maine proposes a year-round exemption for the State sliver waters, defined as those waters between the exemption line established under the amended ALWTRP and the 3-mile territorial line, of Downeast Lobster Zones A-D (Figure 5). As a tradeoff, lobstermen fishing in this area will remove rope from the water via an endline cap and ban on the fishing of single traps, in combination with other measures described below.

Tradeoff Proposal:

Any lobsterman fishing gear in the State sliver waters in Zones A through D would adhere to the following vertical line reduction measures:

- 300 endline cap
- Singles Ban

In exchange, these lobstermen would be allowed to fish floating groundlines according to the following standards:

- Maximum 10 fathom poly groundlines
- Unique groundline marking – one 2 foot mark mid-way on the line

In order to eliminate safety concerns posed by senior citizens and students fishing in small skiffs around islands, the State of Maine proposes a ¼ nautical mile exemption for singles around the islands. These lobstermen would be allowed to fish singles, but would still adhere to the 300 endline cap.

To allow Downeast lobstermen the operational flexibility they will need to fish under the endline cap, the State of Maine will modify current state regulations that limit the number of traps on a line in order to allow for a broad range of gear reconfigurations (i.e. remove pair and triple only areas to allow for use of longer trawls).

To implement this plan in a timely manner and ensure credible enforcement, DMR will codify this plan in State rulemaking. DMR is bound by procedures set forth in the Maine's Administrative Procedures Act (APA), which allows new rules to be put in place in approximately 90 days.

Expected Conservation Benefits:

The amended ALWTRP accomplishes a 17% reduction of rope by removing floating groundlines from the water column when compared to the baseline (Table 3). The State of Maine's Sink Rope Exemption Proposal achieves a 25-32% reduction in rope when compared to the baseline, removing 5,957 to 7,808 miles of rope with a net decrease in the number of endlines in this area by 36% or 7,277 miles of rope. The net conservation benefit achieved by this proposal compared to the amended ALWTRP is a 9-18% reduction in rope, or 1,841 - 3,692 miles of rope removed from the water column.

Gear Marking:

The State of Maine proposes to limit the length of floating groundlines fished in the proposed exemption area to a maximum of 10 fathoms and to require that these floating groundlines be uniquely marked at the center point with a 2 foot colored tracer. Fishermen will have the option of painting, weaving in a colored tracer or attaching another permanent mark as approved by the NMFS Gear Team. Zones A/B will have a different color mark than Zones C/D. The State of Maine will work with the NMFS Gear Team to establish a unique color for each area. Endlines will be marked with a unique numbered tag, issued by the State of Maine, placed directly below the buoy for credible

Maine Marine Patrol enforcement of the endline cap. This tag system will be managed and enforced similarly to the Maine's existing trap tag program.

Implementation:

The State of Maine APA Rulemaking process takes approximately 90 days and will begin immediately following favorable consideration of this proposal by the Atlantic Large Whale Take Reduction Team (ALWTRT). These rules will be promulgated under the Commissioner's existing statutory authority to set rules to promote the conservation of marine organisms. This proposal will require a delay of implementation of the sinkrope groundline mandate in Downeast Maine within the Zones A-D sliver waters during the period following the implementation of the sinking groundline mandate until NOAA Fisheries is able to complete federal rulemaking for this exemption.

Monitoring:

Compliance and enforcement will be monitored by Maine Marine Patrol as part of the State's Joint law Enforcement Agreement with NOAA Fisheries. The State of Maine has an exemplary record of monitoring and enforcing existing ALWTRP measures. In addition, DMR supports the creation of an independent peer review panel to address Northern Gulf of Maine (NGOM) large whale risks and risk reduction measures as well as an independent peer review panel to advise and monitor all future forage research in the NGOM.

In addition to current research conducted by the State of Maine, which includes acoustic and habitat monitoring and near-shore *Calanus* forecasting, DMR is currently pursuing funding to begin a photo-identification regimen at three sights within the state that will detect and monitor entanglements and associated scarring rates. DMR is also in the process of completing a follow-up vertical line study to further document gear configurations for state and federal waters lobstermen, and has implemented trip level mandatory harvester reporting that will better inform this process as we move forward.

Contingency Plan:

Maine proposes to cluster and uniquely mark groundlines in the Zones A/B and C/D slivers. This division is justified by separating the differing bottom habitats between the bold shores of Zones A/B and multiple islands in Zones C/D. The lack of islands off Zones A/B in the exemption area distinguish it from Zones C/D as a more coastal and tide-driven habitat. A measurement of the maximum distance from shore documents this difference showing the average maximum distance from the mainland in the C/D group at approximately 21 nautical miles as compared to approximately 7.5 nautical miles in the A/B group. The occurrence of a confirmed entanglement of a strategic stock in a uniquely marked groundline in either cluster will result in an immediate return to sinking groundlines in that specific cluster and a corresponding return to the allowance of singles in that specific area. However, the endline cap will remain in place which will maintain the conservation benefit by preventing an increase in vertical lines. Maine Marine Patrol

will continue to monitor compliance and the Maine disentanglement network will continue to collaborate with NOAA Fisheries and the Provincetown Center for Coastal Studies for timely and trained response to reported entanglements.

Strategic Research:

DMR's 2008 research plans include acoustic monitoring for right whales around Mount Desert Rock, habitat monitoring at three sites within the state including Jeffrey's Ledge, Mid-coast and Mount Desert Rock, a state-wide plankton survey, near-shore model building for abundance of *Calanus*, and D-tagging humpback, fin and right whales in Downeast fishing waters. Additionally, research will continue on low-profile groundlines and endline risk reduction measures. Potential research projects that will require additional funding and/or discussion are cited below:

- Add endline configurations to harvester reporting logs
- Photo-identification/monitoring for entanglements and entanglement scarring – focus humpbacks and develop for fins
- Shortening groundlines
- Manufactured nugget unique rope marking
- Aerial surveys
- Expanded acoustic monitoring and real-time detection

Conservation Benefit

The Maine Department of Marine Resources (DMR) based its calculations on data from the 2006 Vertical Line Survey and 2006 State of Maine lobster trap tag purchases. Data from a 2003 ROV survey data and sea sampling data from 2001-2002, 2004-2006 were used as supporting information. The following text explains the specific methodologies used to calculate the reduction in line and the resulting conservation benefit. For analytical purposes, endlines and groundlines are considered on a one to one basis, with both being weighted equally as a risk to large whales.

Survey Background

In 2006 DMR responded to the need for baseline information regarding the potential entanglement risk due to vertical lines off Maine's coast required by the Atlantic Large Whale Take Reduction Team (ALWTRT). This was done through a collaborative mail survey with the University of Maine and the Maine lobster industry that aimed at establishing the baseline spatial and temporal patterns of vertical lines and gear configurations throughout Maine's coastal waters.

A vertical line was defined as the line that extends from the trap or traps on the ocean floor to the buoy at the surface and trap configuration was defined as the number of lobster traps set on a buoy. These patterns can range from singles (a single trap on a vertical line), pairs (two traps on a vertical line), triples (three traps on a vertical line), or

trawls (greater than three traps with either a single vertical line or multiple vertical lines). During the analysis of this survey any trawl with five or more traps was assumed to have two vertical lines, consistent with common fishing practices.

Surveys were sent to all of the 1,245 Maine lobstermen who were issued both a state and federal lobster license in 2006. Recipients were asked to fill out the survey and return it to DMR. The table below shows the number of surveys sent, the number of respondents and the response rate.

Summary of 2006 Vertical Line Survey Response Rate

Zone	Number of federal lobster permit holders	Number of Surveys Returned	Return Rate By Zone
A	268	40	14.9%
B	154	29	18.8%
C	155	37	23.9%
D	192	39	20.3%
E	132	22	16.7%
F	194	26	13.4%
G	150	23	15.3%
Total	**1,245**	**216**	**17.3%**

Results were entered into a database and analyzed by zone and distance from shore to establish the baseline trap configurations for these areas. The results of the survey can be found in the report at http://www.maine.gov/dmr/rm/whale/whale.html or request a hard copy from DMR (Smith 2006).

Although the 2006 Vertical Line Survey targeted only federally permitted lobster fishermen, the general trends within the data hold true for the fishery on the whole. For example, baseline trap configurations derived from the state's sea sampling program track well with those determined through the vertical line survey (Table 8). Further, outreach with lobstermen throughout the coast of Maine has confirmed that these baseline trap configurations are representative of fishing habits. The survey results further document the movement of the fishery which largely occurs in the summer months with the vast majority of vertical lines being found inside of three miles from shore. It is clear that even given the option to fish outside of 3 miles, many prefer to fish within state waters for much of the year. This choice is driven in large part by where the lobsters are most prevalent. The seasonal migration of lobsters moves inshore in the spring and summer and subsequently returns to deeper waters offshore in the fall (Carl Wilson pers communication).

This fishing pattern is confirmed by the increase in the number of vertical lines that occurs in April across all zones. In Zones D to the west, the number of vertical lines peak in July, and in Zones C to the east, the peak occurs in August. Following this peak in mid-summer, the number of vertical lines declines slowly through the months of October,

November and December. Inside 3 miles, the presence of vertical lines in January, February and March demonstrates that there are indeed people fishing, however, there are far fewer than in the summer. Over the course of the year, the number of vertical lines recorded gives a reliable idea of how much fishing is occurring. Data reported through this survey suggests that many fishermen are setting their gear in the spring, fishing hard through the summer and fall, thus putting most of the fishing intensity inshore during periods of time when whales have been sighted in waters of the NGOM.

The trend of seasonality affirms that most lobstermen, federally permitted or not, fish the peak months (the only months used here) inside of three miles. This survey is therefore relevant for the purposes used in the below analysis.

Conservation Benefit - Calculation Methods

Baseline

Baseline numbers and miles of rope for endlines and groundlines were calculated using gear configuration information from the 2006 DMR Vertical Line Survey as well as trap tags purchased in 2006. To accomplish this, trap configurations were taken from each Lobster Management Zones (A-D) for 0-3 miles in the months with the highest number of endlines recorded in those areas (Table 4). This occurred in August for all zones except Zone D, which had its peak in July. The number of traps in each configuration was extrapolated to the entire population of lobstermen in each Zone using 2006 numbers for trap tags purchased (Table 5). These numbers were then scaled to the size of the proposed exemption area in each Zone from A-D using calculated area estimates (Table 6). For example, 42% of Zone A's area from 0-3 miles would be designated as proposed exemption area, the rest is within the amended ALWTRP exemption line. Using that area percentage, 42% of the gear reported within 0-3 miles from shore would fall within the proposed exempted area. Area estimates were obtained using ArcGIS's ArcMAP program. The number of total endlines in each Zone was then calculated by assigning one line to configurations including singles, pairs, triples, and four's, and two lines to the remaining larger trawls. The length of each endline was calculated based on the average depth in an area. Using ArcMAP, twenty depth measurements in each lobster Zone were taken from within each of the proposed exemption area and averaged together. The length of an endline for the sliver in each zone was calculated to be 33% longer than the average depth, which is the standard fished by Maine lobstermen to compensate for tides. The length was then converted to miles.

A baseline was also calculated for the number and length (miles) of groundlines in these areas. The aggregate numbers for groundlines present in each zone's sliver were calculated using the same baseline trap configurations used to derive the endline lengths. To calculate the number of groundlines one groundline was assigned for pairs, two for triples and so on, and was extrapolated out to the entire population of lobsterman using the 2006 trap tags purchased (Table 5). Average groundline lengths were estimated in each Zone from a DMR survey done in 2003 that documented gear configurations using a

remotely operated vehicle (Table 7). The number of groundlines in an area was then multiplied by the average length and converted to miles.

Calculations are noted within the respective tables.

Sea Sampling Data

Concerns have been expressed that the 2006 Vertical Line Survey is not representative of the state fishery because it was sent to only lobstermen who held both a state and federal permit. However, the summer season is a time when the fishery is almost exclusively near-shore regardless of permit type due to the migration of lobsters. DMR does not share this concern, and therefore compared the gear configurations received from the survey with string types recorded by the state's Sea Sampling Program (Table 8). Only trips within the proposed exemption area in the peak months were used to correspond with the survey results used here. Trips were recorded from 2001-2002; 2004-2006. The results for Zones B-D are very similar to the survey results and reflective of the configuration of the fishery. Zone B shows a roughly 1/4, ¾ split between singles and pairs in both the survey and sea sampling data. Also showing consistency between data sets, Zone C is predominately reported as pairs and Zone D is split roughly in half between singles and pairs. Zone A is less similar between the two data sets but is still reflective of the fact that the fishery in that particular zone has a longer trawl component. One reason for the difference in data is the locations of the sea sampling trips. Figure 6 shows the sites in all zones of corresponding sea sampling trips. Zone A is largely concentrated offshore at Machias Seal Island and is not reflecting the shorter configurations of gear used near-shore as the survey results show.

Endline Cap and Singles Ban

The conservation benefit of the 300 endline cap and singles ban was calculated as a range. The lower number in the range, "Configuration Change", represents the benefit gained if all lobstermen only changed the configuration of their gear and fished the same number of traps to comply with the endline cap. The larger number in the range, "Trap Adjustment", represents the benefit gained assuming that all lobstermen would continue to fish their current gear configuration (except moving singles to pairs) but reduce the number of traps to comply with the endline cap. DMR received comments from the industry that both of these scenarios would take place in order to deal with an endline cap and therefore did not assume that one would occur over the other. Additionally, the trap adjustment scenario was run with the raw survey data to validate the range calculated above.

To determine the conservation benefit using the "Configuration Change" and "Trap Adjustment" assumptions, a "fisher unit" was established by dividing the total number of traps in each zone's sliver by 800, which is the maximum number of traps that any single lobsterman can fish. For example, lobstermen in Zone A purchased 279,229 traps within the sliver, making up 349 fisher units for that zone. The changes for both "Configuration Change" and "Trap Adjustment" were made to one fisher unit and then expanded up to

the population. In the "Configuration Change" scenario the percentages of gear configurations from the survey change to accommodate the endline cap (Tables 9-12). It was assumed that a lobsterman would trawl up to the smallest gear configuration allowable under the endline cap. In Zone A, a lobsterman would have to shift all of his singles and about half of his pairs to triples to keep all 800 traps and be under the endline cap. The numbers and miles of endlines and groundlines are calculated using the methodology described in the Baseline section of this document to determine the amount of rope in the water column resulting from reconfiguring gear to meet the endline cap. Once this is determined for an individual fisher unit the numbers are extrapolated out to all units in a zone to represent the population of lobstermen in that zone's proposed exempt area. The conservation benefit achieved from the "Trap Adjustment" scenario is done using this same methodology, except that the number of traps in a unit is adjusted to meet the endline cap while the gear configuration remains constant (except for singles moving to pairs under the singles ban). For example, a Zone A lobsterman would reduce the amount of traps fished from 800 to 664 to comply with the cap.

To provide an additional check to these calculations, the trap adjustment scenario was also done using the raw survey data to validate the range calculated above. This was done by individually adjusting the number of traps a survey respondent fished based on the declared gear configuration. This resulted in a decrease in the number of traps surveyed in each zone (Table 13). That percent decline in the number of traps was multiplied by the number of traps fished in each zone's proposed exempted area to get a new total of traps fished in that area (Table 14). For example, in Zone A there would be a 4% decrease in the number of traps fished. The total number of traps in the proposed exempted area for that zone, 279,229, is multiplied by one minus that percentage to get a new total of 269,456 traps. That new number was then multiplied through the configurations from the survey as described above in the baseline calculations.

Calculations are noted within the respective tables.

The proposal includes a ¼ mile buffer around the islands where singles would be allowed in order to accommodate the safety issues related to children and seniors fishing from small boats. The areas that this would affect were re-calculated and the change did not affect the area calculations for any zone (all numbers stayed within rounding) so the buffer was therefore determined to be negligible.

Rope Reductions

Rope reductions were calculated for both the amended ALWTRP with the sinking groundline requirement in place and on a zone by zone basis for the 300 endline cap and singles ban in the proposed exemption trade-off (Table 3). Negative numbers in the table represent rope taken out of the water while positive values represent rope being put back into the water column. The baseline numbers for groundlines were calculated using current average lengths from the 2003 ROV survey as described above (Table 7). Groundlines being added back into the water column (as a result of the exemption) in the form of floating groundlines were calculated back in at 10 fathom lengths as proposed in

the plan. The reduction in endlines accomplished by the singles ban and the endline cap are presented in miles and also yield new endline totals and a % decrease in the miles of endlines in an area. The net rope reduction and corresponding percentage reduction achieved through this proposal as compared to the baseline are calculated by the following equation:

$$Linereduction_{net} = (EL_{new} + GL_{float}) - (EL_{base} + GL_{float})$$

Where EL = enlines, GL = groundline under baseline and new configuration.

Rope reductions and respective percentages as compared to the amended ALWTRP are calculated by the following equation:

$$Linereduction_{ALWTRP} = (EL_{new} + GL_{float}) - (EL_{base} + GL_{snk})$$

Where EL = enlines, GL = groundline , under baseline and new configuration.

Results and Discussion

Baseline

The baseline numbers of endlines and groundlines in the proposed areas were calculated as discussed above from the 2006 DMR Vertical Line Survey. That survey yielded information regarding the baseline configurations of gear used in different areas of the coast. Table 4 consists of a current (baseline) breakdown of gear configurations by lobster management Zone (A-D). These numbers represent the current configurations before the October 5, 2008 deadline. The results that are immediately apparent are the large proportions of shorter sets of gear, namely singles, pairs, and triples. In state waters Zones B and C have very high densities of shorter gear configurations with 83% and 92% of their gear make up of pairs respectively. These gear configurations were then calculated out to determine the baseline for the numbers and miles of endlines and groundlines in each area. In 2006 Zones A-D had a total of 19,984 miles of endlines and 4,116 miles of floating groundline within the area being proposed for sinking groundline exemption.

Amended ALWTRP

The numbers for the amended ALWTRP that will go into effect October, 2008 have been calculated in Table 3 for the proposed exemption areas. Compared to the 2006 baseline the amended ALWTRP with its sinking groundline provision achieves a conservation benefit of a 17% reduction of the rope out of the water column. This is solely accomplished by removing 4,116 miles of floating groundlines and replacing them with sinking groundline.

Exemption Area Proposal

The proposed exemption area will establish a 300 endline cap and a ban on singles. The conservation benefit of this tradeoff has been calculated in a range using gear configuration changes and trap adjustments to stay under the endline cap (Table 3). For the proposed area between the amended ALWTRP exemption line and the state waters boundary in Lobster Zones A-D there will be a net conservation benefit between 25-32% when compared to the 2006 baseline numbers. This translates into 5,957 – 7,808 miles of rope being taken out of the water column from the status quo. This benefit includes a 36% or 7,277 mile reduction in endlines alone (up to 49% in any one zone).

After the universal sinking groundline component of the amended ALWTRP goes into effect in October, 2008, the baseline for the amount of rope in the water column changes due to the lack of floating groundline. When the current proposed plan is compared to the amended ALWTRP there is a net conservation benefit of 9-18% greater than the amended plan or 1,841 – 3,692 additional miles of rope out of the water column (up to a 34% net reduction in Zone D).

The numbers calculated for the conservation benefit were verified against numbers generated by changing the actual raw survey responses for trap adjustments (Table 3). Calculating the benefit this way returns a 25% net gain (6,053 miles of rope) when compared to the 2006 baseline and a 10% net gain (1,936 miles) greater than the amended ALWTRP.

Conclusion

DMR has long asserted that, due to the rocky and tidal habitat of the NGOM, some flotation is needed in groundlines in order for the Maine lobster fishery to fish safely and efficiently. For the past five years, DMR has collaborated with NOAA Fisheries and the Maine lobster fishing industry to develop and test alternative fishing gear modifications that will reduce the risk of entanglement to large whales while maintaining operational viability for the Maine lobster fishery. While new gear technologies have not yet been approved by the ALWTRT, the concept of a conservation trade-off may yield the result that DMR has been striving for, ensured industry viability while reducing risk of entanglement to large whales. The proposed exemption to the sinking groundline requirement of the amended ALWTRP for Downeast Maine achieves not simply a conservation trade-off but offers an opportunity to realize real and significant risk reductions in the form of 36% of endlines in the sliver out of the water. This is a reduction of 9-18% in rope over and above what the current plan can accomplish and 25-32% less rope in the water column than the status quo. DMR is confident that through this trade-off proposal that significant steps can be made to conserve threatened and endangered whales without also endangering the State of Maine's vital lobster industry.

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Web Sites:

www.maineboats.com/tide-charts.com
www.gomoos.org

Tables and Figures:

Table 1. The percentage of bottom samples surveyed that are either predominately rock or contain some rock per Lobster Management Zone. Data taken from Maine Geological Survey 1996.

	Zones							
	A	**B**	**C**	**D**	**E**	**F**	**G**	***Total***
% predominately rock	44%	49%	48%	46%	54%	53%	45%	*48%*
% contain rock	49%	53%	49%	48%	60%	57%	47%	*52%*

Table 2. Average, maximum and minimum values for total organisms, Calanus, and all copepods in three different regions of the survey, Southern, Mid-Coast and Downeast. P-values indicate a significant difference between downeast and the other two regions in both calanus and all copepods. There are fewer copepods in this region.

Regions

Southern

	org m^{-3}	**calanus m^{-3}**	**% calanus**	**% ≥ IV**	**copepods m^{-3}**
Avg	698.34	239.07	36.22	30.32	326.26
Max	3266.09	911.12	71.15	97.87	1618.11
Min	47.46	1.96	4.13	0.00	6.88
p-value vs. mid-coast		0.6900			0.6500
p-value vs. downeast		0.0009			0.0160

Mid-coast

	org m^{-3}	**calanus m^{-3}**	**% calanus**	**% ≥ IV**	**copepods m^{-3}**
Avg	608.95	202.73	32.82	25.82	272.32
Max	2018.17	1106.74	54.84	69.06	1011.18
Min	99.95	0.28	13.38	0.00	0.43
p-value vs. southern		0.6900			0.6500
p-value vs. downeast		0.0300			0.0270

Downeast

	org m^{-3}	**calanus m^{-3}**	**% calanus**	**% ≥ IV**	**copepods m^{-3}**
Avg	150.33	55.74	41.20	49.71	116.06
Max	609.48	296.64	76.13	100.00	458.01
Min	23.80	0.39	18.97	0.58	0.82
p-value vs. southern		0.0009			0.0160
p-value vs. mid-coast		0.0300			0.0270

Table 3. Baseline (BL) amounts of endlines (EL) and groundlines (GL) and the changes due to the proposed 300 cap/singles ban and the federal rule (FR). A negative number designates rope being removed from the water and a positive number represents rope being added to the water column. A 300 cap and singles ban results in a 25-32% reduction in rope from the baseline and a 9-18% reduction in rope from the amended ALWTRP.

Federal Rule

	Baseline - 2006			Amended ALWTRP - Oct. 2008				Comparison FR vs. BL	
Zone	Miles EL	Float GL	Sink GL	EL decrease	new EL total	% EL dec.	Float GL	Rope red. BL	% From BL
A	7093	2024	0	0	7093	0%	0	-2024	-22%
B	1369	341	0	0	1369	0%	0	-341	-20%
C	4281	948	0	0	4281	0%	0	-948	-18%
D	7241	803	0	0	7241	0%	0	-803	-10%
Sum	***19984***	***4116***	***0***	***0***	***19984***	***0%***	***0***	***-4116***	***-17%***

Exemption Proposal

Configuration Changes - Fisher units

	Baseline - 2006			300 Cap Proposal				Comparison Cap vs BL		Comparison Cap vs FR	
Zone	Miles EL	Float GL	Sink GL	EL decrease	new EL total	% EL dec.	Float GL	Rope red. BL	% From BL	Rope red. FR	% From FR
A	7093	2024	0	-2010	5083	-28%	2030	-2005	-22%	20	0%
B	1369	341	0	-454	915	-33%	403	-391	-23%	-50	-4%
C	4281	948	0	-1240	3041	-29%	1256	-932	-18%	16	0%
D	7241	803	0	-3574	3667	-49%	1747	-2629	-33%	-1827	-25%
Sum	***19984***	***4116***	***0***	***-7277***	***12707***	***-36%***	***5435***	***-5957***	***-25%***	***-1841***	***-9%***

Taken from Baseline calculations in Table 6 — Taken from 300 cap calculations in Tables 8-11 — Rope reductions = (new EL total + float GL) - (Baseline endlines + baseline groundlines)

Trap Adjustments - Fisher units

	Baseline - 2006			300 Cap Proposal				Comparison Cap vs BL		Comparison Cap vs FR	
Zone	Miles EL	Float GL	Sink GL	EL decrease	new EL total	% EL dec.	Float GL	Rope red. BL	% From BL	Rope red. FR	% From FR
A	7093	2024	0	-2010	5083	-28%	1482	-2552	-28%	-527	-7%
B	1369	341	0	-454	915	-33%	248	-546	-32%	-206	-15%
C	4281	948	0	-1240	3041	-29%	762	-1426	-27%	-478	-11%
D	7241	803	0	-3574	3667	-49%	1093	-3284	-41%	-2481	-34%
Sum	***19984***	***4116***	***0***	***-7277***	***12707***	***-36%***	***3586***	***-7808***	***-32%***	***-3692***	***-18%***

Trap Adjustments - Raw data

	Baseline - 2006			300 Cap Proposal				Comparison Cap vs BL		Comparison Cap vs FR	
Zone	Miles EL	Float GL	Sink GL	EL decrease	new EL total	% EL dec.	Float GL	Rope red. BL	% From BL	Rope red. FR	% From FR
A	7093	2024	0	-1186	5907	-17%	1722	-1488	-16%	536	8%
B	1369	341	0	-228	1141	-17%	309	-260	-15%	81	6%
C	4281	948	0	-1117	3164	-26%	793	-1272	-24%	-324	-8%
D	7241	803	0	-3386	3855	-47%	1155	-3033	-38%	-2230	-31%
Sum	***19984***	***4116***	***0***	-5916	***14067***	**-30%**	***3980***	***-6053***	***-25%***	***-1936***	***-10%***

Table 4. Percentage of configurations of gear declared by survey respondents in each lobster zone and the associated number of traps.

Configurations

Gear Configuration	Zone A # of traps	A % of total	Zone B # of traps	B % of total	Zone C # of traps	C % of total	Zone D # of traps	D % of total
Singles	2360	14%	1613	13%	1400	6%	11800	50%
Pairs	10290	62%	10008	83%	20875	92%	10800	46%
Triples	1650	10%	450	4%	400	2%	0	0%
4's	400	2%	0	0%	0	0%	0	0%
5's	286	2%	0	0%	0	0%	0	0%
6's	400	2%	0	0%	0	0%	0	0%
10's	960	6%	0	0%	0	0%	0	0%
12's	120	1%	0	0%	0	0%	0	0%
16's	0	0%	0	0%	0	0%	800	3%
Total	16466	-	12070	-	22675	-	23400	-

Table 5. Baseline numbers for all state waters using the trap tags sold in each zone in 2006. % of traps in each gear configuration was taken from the 2006 Vertical Line Survey (Table 4).

Baseline - State waters						
	Zone A	Zone B	Zone C	Zone D	*Sum*	
Tags Sold	664831	315745	552475	718735	*2251786*	Taken from trap tags sold in 2006
Tags surveyed	116466	12070	22675	23400	*74701*	
% singles	14%	13%	6%	50%	*24%*	%'s taken from vertical line survey
singles sold	95287	42182	34111	362439	*534019*	Multiply tags sold by gear percentage
singles lines	95287	42182	34111	362439	*534019*	Lines (4 or less traps) = # traps / configuration
% pairs	62%	83%	92%	46%	*67%*	
pairs sold	415469	261791	508618	331724	*1517602*	
pairs lines	207734	130896	254309	165862	*758801*	
% triples	10%	4%	2%	0%	*4%*	
triples sold	66620	11772	9746	0	*88138*	
triples lines	22207	3924	3249	0	*29379*	
% 4's	2%	0%	0%	0%	*1%*	
4's sold	16150	0	0	0	*16150*	
4's lines	4038	0	0	0	*4038*	
% 5's	2%	0%	0%	0%	*1%*	
5's sold	11548	0	0	0	*11548*	
5's lines	4619	0	0	0	*4619*	Lines (5 or more traps) = # traps / configuration * 2
% 6's	2%	0%	0%	0%	*1%*	
6's sold	16150	0	0	0	*16150*	
6's lines	5383	0	0	0	*5383*	
% 10's	6%	0%	0%	0%	*2%*	
10's sold	38761	0	0	0	*38761*	
10's lines	7752	0	0	0	*7752*	
% 12's	1%	0%	0%	0%	*0%*	
12's sold	4845	0	0	0	*4845*	
12's lines	808	0	0	0	*808*	
% 16's	0%	0%	0%	3%	*1%*	
16's sold	0	0	0	24572	*24572*	
16's lines	0	0	0	3072	*3072*	
Endlines						
Total lines	347828	177002	291669	531372	*1347871*	
Area						
Sliver %	42%	18%	32%	34%		

Table 6. Baseline numbers calculated only for the percentage of traps that make up the "sliver" water between the amended ALWTRP exemption line and the state boundary. The number of traps for each zone in Table 5 was multiplied by the % of state waters that makes up the proposed exempt area to get a relative portion of traps fished there. That number was input into the "Tags sold" row and multiplied through the configurations obtained from the survey.

Baseline Sliver only	

	Zone A	Zone B	Zone C	Zone D	*Sum*	
Tags Sold	279229	56834	176792	244370	*757225*	Tags sold from Table 5 * proposed area %
Tags surveyed	6916	2173	7256	7956	*24451*	
% singles	14%	13%	6%	50%	*24%*	
singles sold	40021	7593	10915	123229	*181758*	
singles lines	40021	7593	10915	123229	*181758*	
% pairs	62%	83%	92%	46%	*66%*	
pairs sold	174497	47122	162758	112786	*497163*	
pairs lines	87248	23561	81379	56393	*248582*	
% triples	10%	4%	2%	0%	*4%*	
triples sold	27981	2119	3119	0	*33218*	
triples lines	9327	706	1040	0	*11073*	
% 4's	2%	0%	0%	0%	*1%*	
4's sold	6783	0	0	0	*6783*	
4's lines	1696	0	0	0	*1696*	
% 5's	2%	0%	0%	0%	*1%*	
5's sold	4850	0	0	0	*4850*	
5's lines	1940	0	0	0	*1940*	
% 6's	2%	0%	0%	0%	*1%*	
6's sold	6783	0	0	0	*6783*	
6's lines	2261	0	0	0	*2261*	
% 10's	6%	0%	0%	0%	*2%*	
10's sold	16280	0	0	0	*16280*	
10's lines	3256	0	0	0	*3256*	
% 12's	1%	0%	0%	0%	*0%*	
12's sold	2035	0	0	0	*2035*	
12's lines	339	0	0	0	*339*	
% 16's	0%	0%	0%	3%	*1%*	
16's sold	0	0	0	8355	*8355*	
16's lines	0	0	0	1044	*1044*	
Endlines						
Total lines	146088	31860	93334	180667	*451949*	
X Depth (m)	11415309	2203458	6888980	11652998	*32160745*	Total lines * (average depth *1.33) Zone A that equals 146088 (59 meters* 1.33)
EL length (mi)	7093	1369	4281	7241	*19984*	
Groundlines						
Total	137039	24974	83458	64225	*309696*	Groundlines = (traps sold/configuration) * (congifuration – 1)
Average fa.	1781509	299686	834580	706480	*3622255*	Groundlines * average length from Table 7 (fa)
Average (mi)	2024	341	948	803	*4116*	

Table 7. Average groundline lengths in fathoms per Lobster Management Zone taken from the DMR 2003 ROV Gear Survey. N equals the number of ROV drops done in each Zone.

	Zones						
	A	**B**	**C**	**D**	**E**	**F**	**G**
Average length (fa)	13	12	10	11	14	12	14
N	23	29	32	27	3	22	16

Table 8. All hauls done by sea samplers in the sliver during the peak month used (Aug. for A-C and July for D). Gear configurations recorded from B, C and D are similar to the survey and are reflective of the fishery in those areas. In Zone A there is a heavier reliance on longer trawls than the survey reports. This may be due to the fact that most of the samples taken from Zone A during that time occur at an offshore island, Machias Seal Island, where trawls are fished and is therefore not reflective of the shorter gear fished closer to the mainland.

Sea Sampling Data 2001-2002, 2004-2006

Zone A - Aug

Configuration	Singles	Pairs	Triples	4	5	6	8	10	12	16	Total
Number of Hauls	1	8	-	-	-	-	12	-	11	-	32
% by type	**3%**	**25%**	**-**	**-**	**-**	**-**	**38%**	**-**	**34%**	**-**	**100%**

Zone B - Aug

Configuration	Singles	Pairs	Triples	4	5	6	8	10	12	16	Total
Number of Hauls	4	14	-	-	-	-	-	-	-	-	18
% by type	**22%**	**78%**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**100%**

Zone C - Aug

Configuration	Singles	Pairs	Triples	4	5	6	8	10	12	16	Total
Number of Hauls	-	24	-	-	-	-	-	-	-	-	24
% by type	**-**	**100%**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**100%**

Zone D - July

Configuration	Singles	Pairs	Triples	4	5	6	8	10	12	16	Total
Number of Hauls	28	30	-	-	-	-	-	-	-	-	58
% by type	**48%**	**52%**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**100%**

Table 9. "Fisher unit" calculations for Zone A. A fisher unit was defined as a group of 800 traps (calculated by dividing the total number of traps by 800). Zone A has 349 fisher units. Each unit was applied to the same gear configurations from the survey for the baseline and then those configurations either changed to get under then endline cap or the number of traps in a unit was adjusted to reach 300 endlines.

Zone A

Fisher units = 349 Zone A fisher units = 279229 from Table 6 / 800

Configuration	Singles	Pairs	Triples	4	5	6	8	10	12	16	Total
% by type	**14%**	**62%**	**10%**	**2%**	**2%**	**2%**	**0%**	**6%**	**1%**	**0%**	**100%**
	Taken from survey gear configurations										
Baseline	Number of traps/type = 279229 * gear %										
Number of traps/type	40021	174497	27981	6783	4850	6783	0	16280	2035	0	279230
Number of endlines	40021	87249	9327	1696	1940	2261	0	3256	339	0	146089
Endline Length (mi)	1943.12	4236.15	452.85	82.34	94.19	109.78	0.00	158.09	16.46	0.00	7092.97
Groundline length (mi)	0.00	1288.90	275.57	75.15	57.32	83.50	0.00	216.45	27.56	0.00	2024.45
300 Cap - Configuration change	Traps stay fixed at 800 but gear configurations change to stay under 300 endlines per fisher unit. Notice singles ban										
% by type	0%	31%	56%	2%	2%	2%	0%	6%	1%	0%	100%
Number of traps/type	0	248	448	19	14	19	0	47	6	0	801
Number of endlines	0	124	149	5	6	6	0	9	1	0	300
Endline Length (mi)	0.00	6.02	7.23	0.24	0.29	0.29	0.00	0.44	0.05	0.00	14.57
Groundline length (mi)	0.00	1.41	3.39	0.16	0.13	0.18	0.00	0.48	0.06	0.00	5.82
300 Cap - Trap adjustment	Gear configurations stay fixed, except for the singles ban (move to pairs), and the number of traps in the fisher unit changes.										
% by type	0%	76%	10%	2%	2%	2%	0%	6%	1%	0%	100%
Number of traps/type	0	509	67	16	12	16	0	39	5	0	664
Number of endlines	0	255	22	4	5	5	0	8	1	0	300
Endline Length (mi)	0.00	12.38	1.07	0.19	0.24	0.24	0.00	0.39	0.05	0.00	14.57
Groundline length (mi)	0.00	2.89	0.51	0.14	0.11	0.15	0.00	0.40	0.05	0.00	4.25

Multiply the values for one unit by the number of units for the whole population in that zone.

	x Fisher units	
14.57	* 349 =	5083
5.82	* 349 =	2030
14.57	* 349 =	5083
4.25	* 349 =	1482

Table 10. "Fisher unit" calculations for Zone B. A fisher unit was defined as a group of 800 traps (calculated by dividing the total number of traps by 800). Zone B has 71 fisher units. Each unit was applied to the same gear configurations from the survey for the baseline and then those configurations either changed to get under then endline cap or the number of traps in a unit was adjusted to reach 300 endlines.

Zone B
Fisher units = 71

Configuration	Singles	Pairs	Triples	4	5	6	8	10	12	16	Total		
% by type	**13%**	**83%**	**4%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**100%**		
Baseline													
Number of traps/type	7593	47122	2119	0	0	0	0	0	0	0	56834		
Number of endlines	7593	23561	706	0	0	0	0	0	0	0	31860		
Endline Length (mi)	326.30	1012.51	30.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1369.15		
Groundline length (mi)	0.00	267.74	16.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	283.79		
300 Cap - Configuration change													
% by type	0%	25%	75%	0%	0%	0%	0%	0%	0%	0%	100%		
Number of traps/type	0	200	600	0	0	0	0	0	0	0	800		
Number of endlines	0	100	200	0	0	0	0	0	0	0	300	***x Fisher units***	
Endline Length (mi)	0.00	4.30	8.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.89		915
Groundline length (mi)	0.00	1.14	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.68		403
300 Cap - Trap adjustment													
% by type	0%	96%	4%	0%	0%	0%	0%	0%	0%	0%	100%		
Number of traps/type	0	583	24	0	0	0	0	0	0	0	607		
Number of endlines	0	292	8	0	0	0	0	0	0	0	300	***x Fisher units***	
Endline Length (mi)	0.00	12.55	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.89		915
Groundline length (mi)	0.00	3.31	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.49		248

Table 11. "Fisher unit" calculations for Zone C. A fisher unit was defined as a group of 800 traps (calculated by dividing the total number of traps by 800). Zone C has 221 fisher units. Each unit was applied to the same gear configurations from the survey for the baseline and then those configurations either changed to get under then endline cap or the number of traps in a unit was adjusted to reach 300 endlines.

Zone C
Fisher units = 221

Configuration	Singles	Pairs	Triples	4	5	6	8	10	12	16	Total	
% by type	**6%**	**92%**	**2%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**100%**	
Baseline												
Number of traps/type	10915	162758	3119	0	0	0	0	0	0	0	176792	
Number of endlines	10915	81379	1040	0	0	0	0	0	0	0	93334	
Endline Length (mi)	500.63	3732.57	47.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4280.91	
Groundline length (mi)	0.00	924.76	23.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	948.39	
300 Cap - Configuration change												
% by type	0%	25%	75%	0%	0%	0%	0%	0%	0%	0%	100%	
Number of traps/type	0	200	600	0	0	0	0	0	0	0	800	
Number of endlines	0	100	200	0	0	0	0	0	0	0	300	***x Fisher units***
Endline Length (mi)	0.00	4.59	9.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.76	3041
Groundline length (mi)	0.00	1.14	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.68	1256
300 Cap - Trap adjustment												
% by type	0%	98%	2%	0%	0%	0%	0%	0%	0%	0%	100%	
Number of traps/type	0	591	12	0	0	0	0	0	0	0	603	
Number of endlines	0	296	4	0	0	0	0	0	0	0	300	***x Fisher units***
Endline Length (mi)	0.00	13.58	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.76	3041
Groundline length (mi)	0.00	3.36	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.45	762

Table 12. "Fisher unit" calculations for Zone D. A fisher unit was defined as a group of 800 traps (calculated by dividing the total number of traps by 800). Zone D has 305 fisher units. Each unit was applied to the same gear configurations from the survey for the baseline and then those configurations either changed to get under then endline cap or the number of traps in a unit was adjusted to reach 300 endlines.

Zone D
Fisher units = 305

Configuration	Singles	Pairs	Triples	4	5	6	8	10	12	16	Total		
% by type	**50%**	**46%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**3%**	**100%**		
Baseline													
Number of traps/type	123229	112786	0	0	0	0	0	0	0	8355	244370		
Number of endlines	123229	56393	0	0	0	0	0	0	0	1044	180666		
Endline Length (mi)	4939.21	2260.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.85	7241.37		
Groundline length (mi)	0.00	640.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	89.01	729.84		
300 Cap - Configuration change													
% by type	0%	29%	68%	0%	0%	0%	0%	0%	0%	3%	100%		
Number of traps/type	0	232	544	0	0	0	0	0	0	27	803		
Number of endlines	0	116	181	0	0	0	0	0	0	3	300	***x Fisher units***	
Endline Length (mi)	0.00	4.65	7.25	0.00	0.00	0.00	0.00	0.00	0.00	0.12	12.02		3667
Groundline length (mi)	0.00	1.32	4.12	0.00	0.00	0.00	0.00	0.00	0.00	0.29	5.73		1747
300 Cap - Trap adjustment													
% by type	0%	97%	0%	0%	0%	0%	0%	0%	0%	3%	100%		
Number of traps/type	0	595	0	0	0	0	0	0	0	19	614		
Number of endlines	0	298	0	0	0	0	0	0	0	2	300	***x Fisher units***	
Endline Length (mi)	0.00	11.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	12.02		3667
Groundline length (mi)	0.00	3.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	3.58		1093

Table 13. The baseline number of traps surveyed per zone, the decrease and % decrease associated with a 300 endline cap. The trap decrease was calculated by going back to the raw data from the vertical line survey and changing the number of traps a lobsterman could declare for his specific gear configuration to stay under a 300 endline cap. Singles were also removed. The % decrease was used to recalculate the number of traps going into a zone under the cap (Table 13).

Survey trap number changes

		300 Cap	
Zone	Baseline traps	Trap decrease	% decline
A	17026	600	4%
B	11600	625	5%
C	22675	4875	21%
D	23400	4500	19%

Table 14. The baseline for the sliver is recalculated here using the reduced number of tags sold and multiplying that through the gear configurations. The new number of tags sold is calculated by multiplying the baseline for the sliver by the % decrease in traps for each zone from Table 12.

300 cap

	Zone A	Zone B	Zone C	Zone D	*Sum*
Tags Sold	269456	53765	138782	197451	*659454*
Tags surveyed	6916	2173	7256	7956	*24451*
% singles					
singles sold					
singles lines					
% pairs	77%	96%	98%	97%	*89%*
pairs sold	207010	51761	136334	190700	*585804*
pairs lines	103505	25880	68167	95350	*292902*
% triples	10%	4%	2%	0%	*5%*
triples sold	27001	2005	2448	0	*31454*
triples lines	9000	668	816	0	*10485*
% 4's	2%	0%	0%	0%	*1%*
4's sold	6546	0	0	0	*6546*
4's lines	1636	0	0	0	*1636*
% 5's	2%	0%	0%	0%	*1%*
5's sold	4680	0	0	0	*4680*
5's lines	1872	0	0	0	*1872*
% 6's	2%	0%	0%	0%	*1%*
6's sold	6546	0	0	0	*6546*
6's lines	2182	0	0	0	*2182*
% 10's	6%	0%	0%	0%	*2%*
10's sold	15710	0	0	0	*15710*
10's lines	3142	0	0	0	*3142*
% 12's	1%	0%	0%	0%	*0%*
12's sold	1964	0	0	0	*1964*
12's lines	327	0	0	0	*327*
% 16's	0%	0%	0%	3%	*1%*
16's sold	0	0	0	6750	*6750*
16's lines	0	0	0	844	*844*
Endlines					
Total lines	121665	26548	68983	96194	*313390*
X Depth (m)	9506892	1836091	5091623	6204514	*22639119*
EL length (mi)	5907	1141	3164	3855	*14067*
Diff vs BL (mi)	1186	228	1117	3386	*5916*
% Diff vs BL	17%	17%	26%	47%	*30%*
Groundlines					
Total	151553	27217	69799	101679	*350247*
10 fa. max	1515528	272166	697989	1016788	*3502470*
10 fa. (mi)	1722	309	793	1155	*3980*

Tags sold = baseline sliver total * decrease from Table 12 for reduced number.

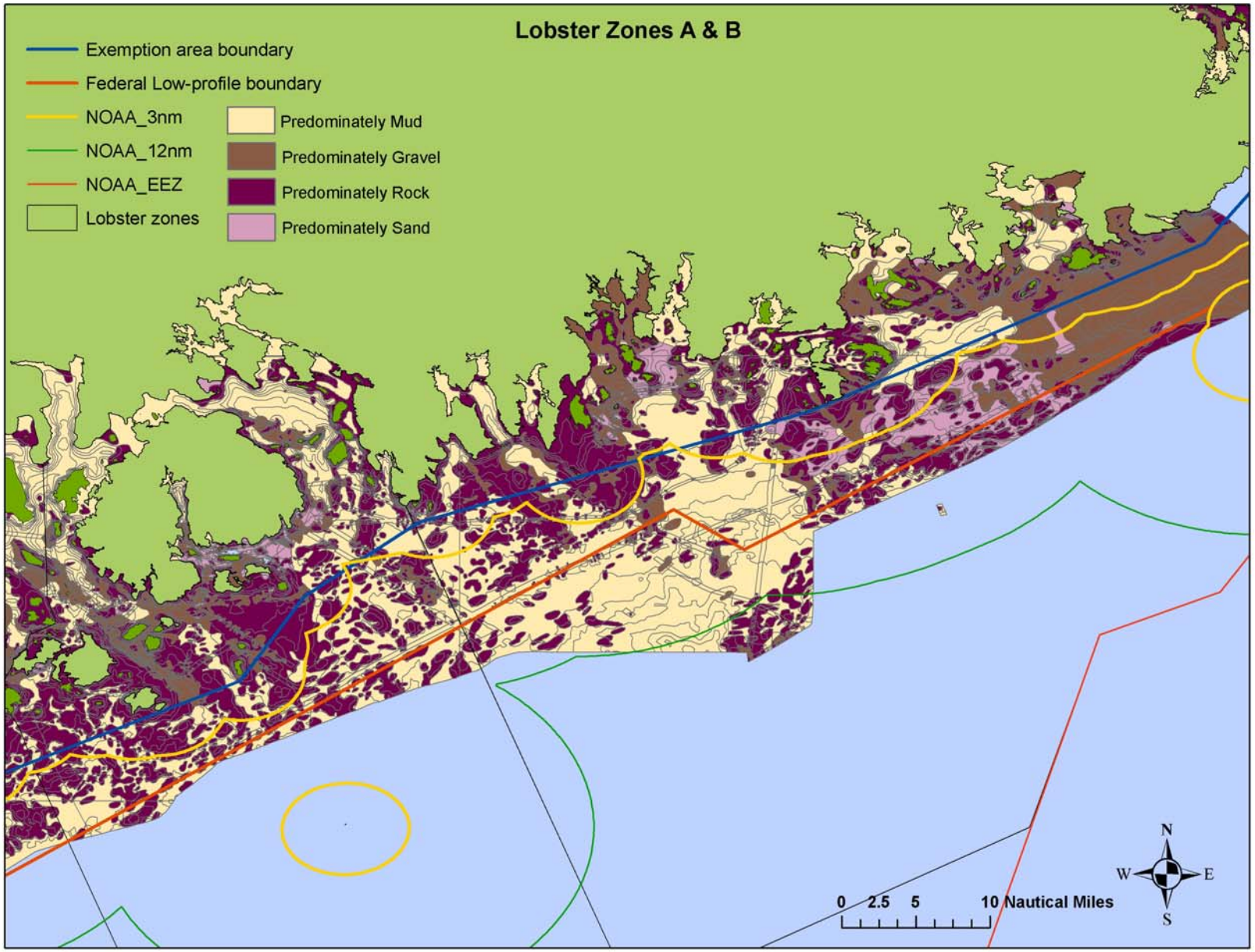

Figure 1 (A). Bottom types categorized as predominately mud, gravel, rock, or sand in Lobster Zones A and B. Data taken from Maine Geological Survey 1996.

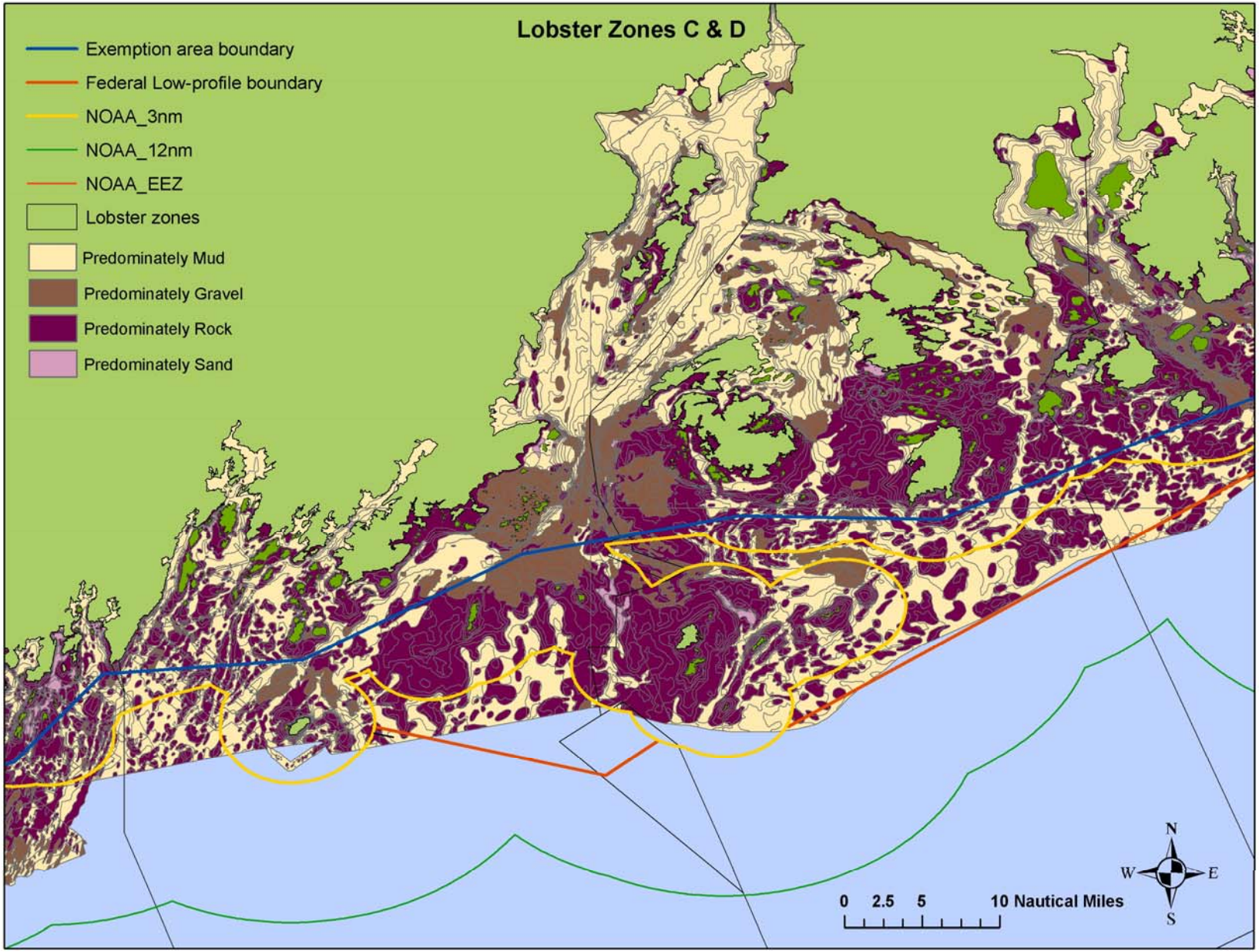

Figure 1 (B). Bottom types categorized as predominately mud, gravel, rock, or sand in Lobster Zones C and D.

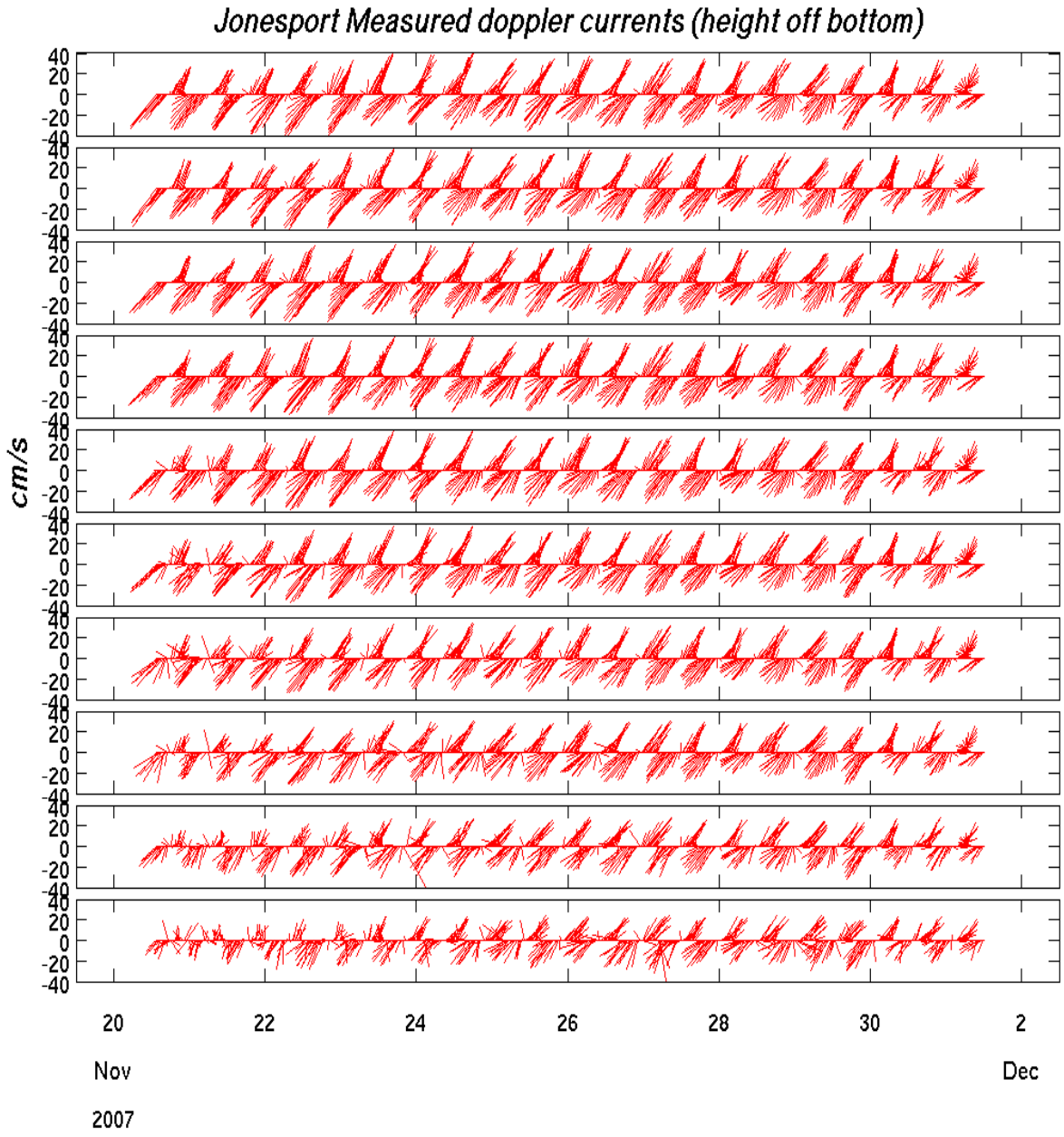

Figure 2. Vector plots of currents at fine scale resolution (.2 meter) depth intervals above the bottom measured off Jonesport ME by an Acoustic Doppler Current Profile. This data is preliminary data from the Gulf of Maine Lobster Foundation through a Northeast Consortium grant used by permission here. The red lines point in the direction of flow (up = north), and their length is a measure of speed. The back and forth oscillations are the tidal currents. The mean flow is small. It is only at ~1 m off the bottom that a substantial decrease is apparent. Expectations were that the frictional bottom boundary layer should have reduced the currents up to about 5 m off the bottom and currents should have been weaker 1 m off bottom. Preliminary findings suggests a frictional layer much thinner than anticipated.

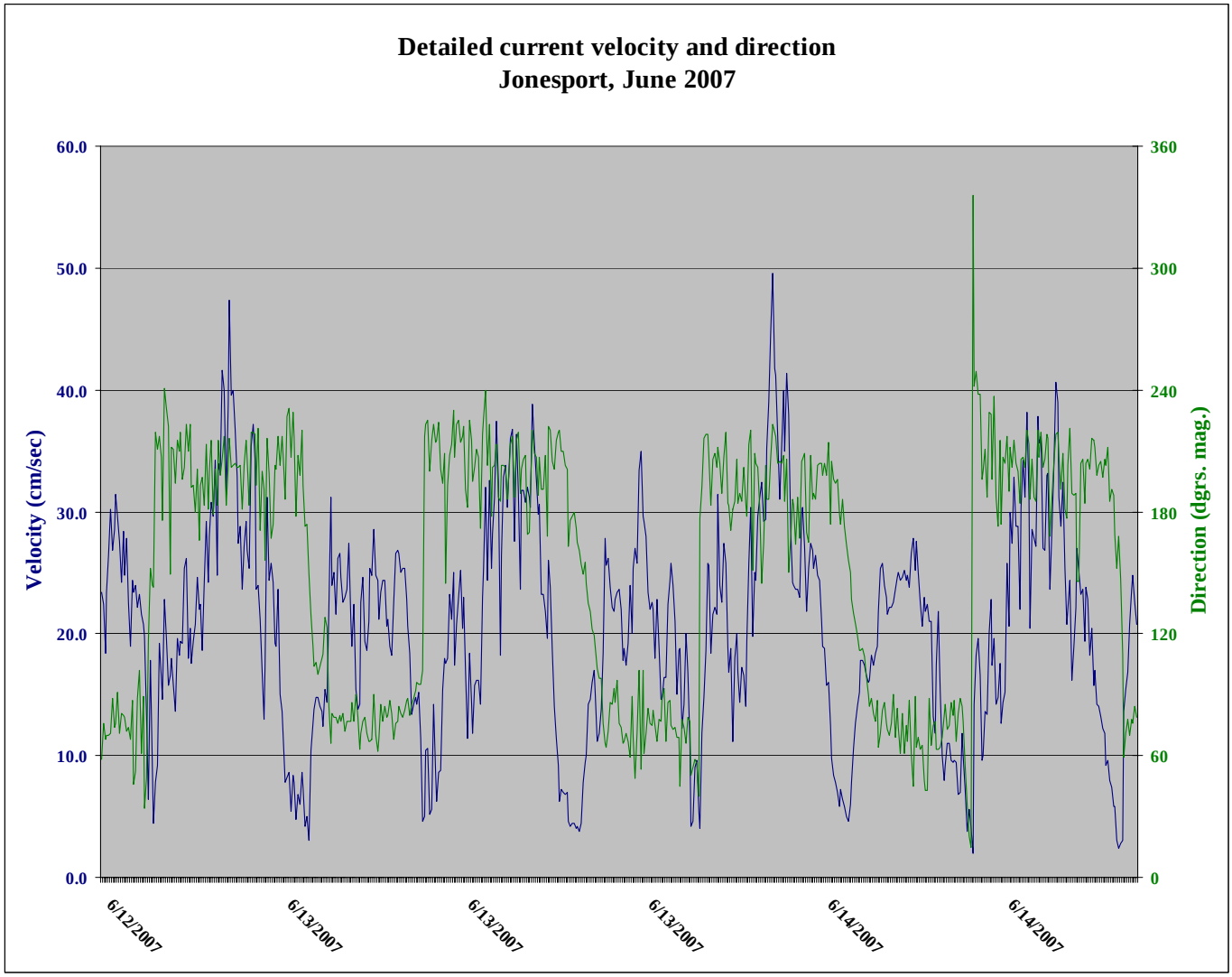

Figure 3. Data used by permission from the Gulf of Maine Lobster Foundation. A sample plot of the current measurements obtained by the mechanical flow meter deployed independently and adjacent to the 20-trap trawl, showing current direction (generally NE/SW) and velocity (up to one knot) at one fathom (6 feet) off the bottom.

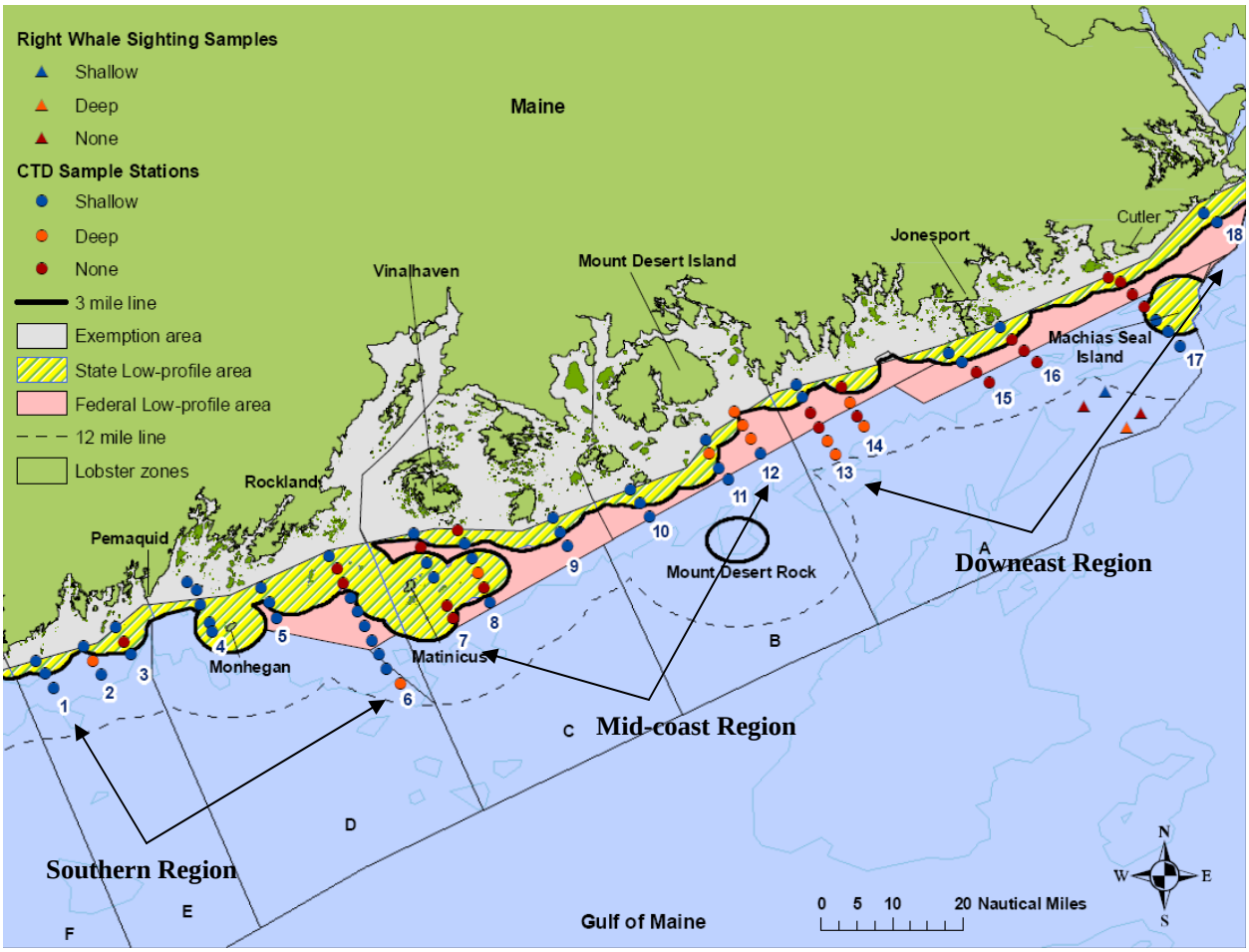

Figure 4. CTD/plankton survey sampling locations and associated transect line numbers.

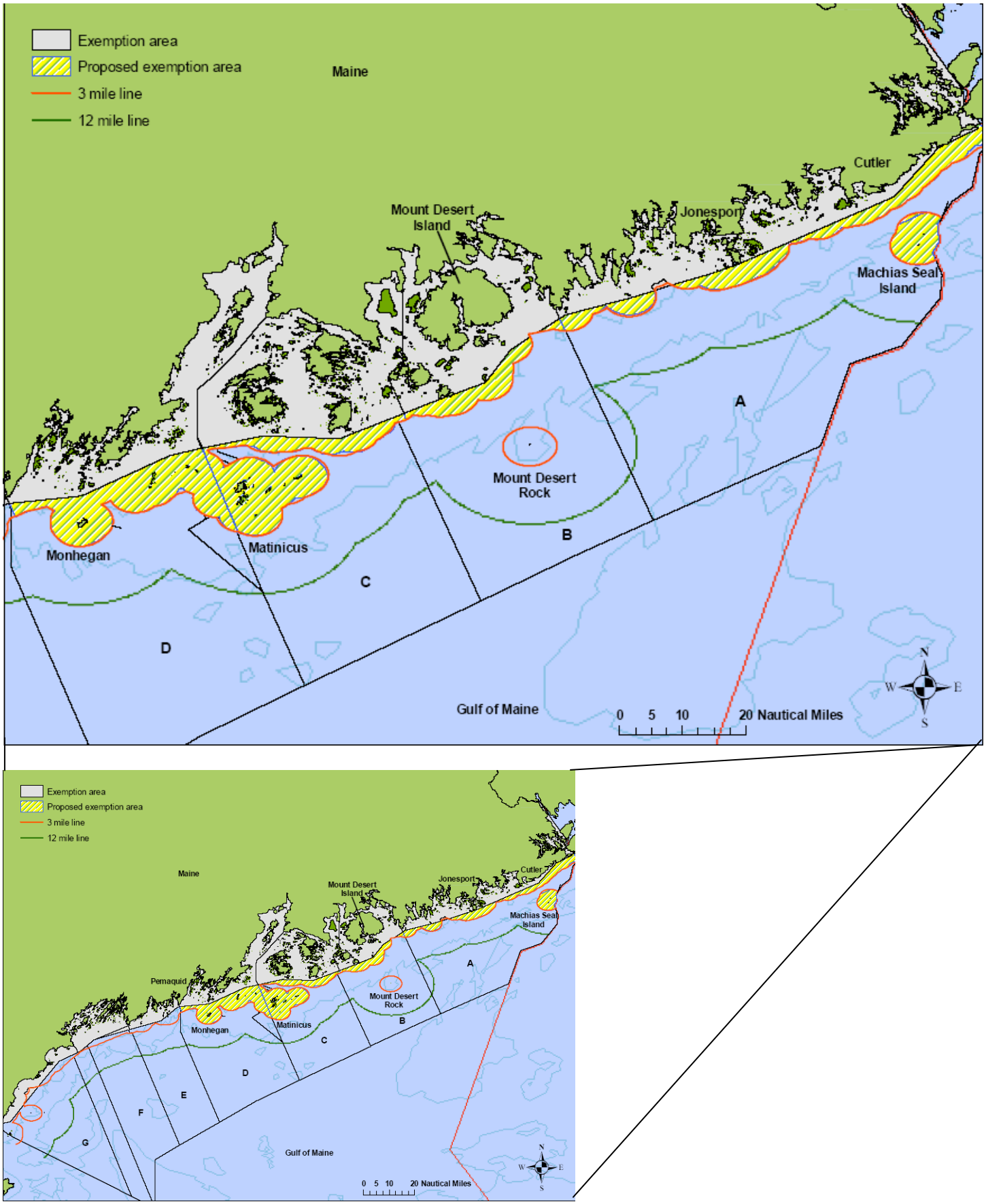

Figure 5. Proposed areas for exemption the sink line mandate comprise the "sliver" between the amended ALWTRP exemption line and the state waters boundary.

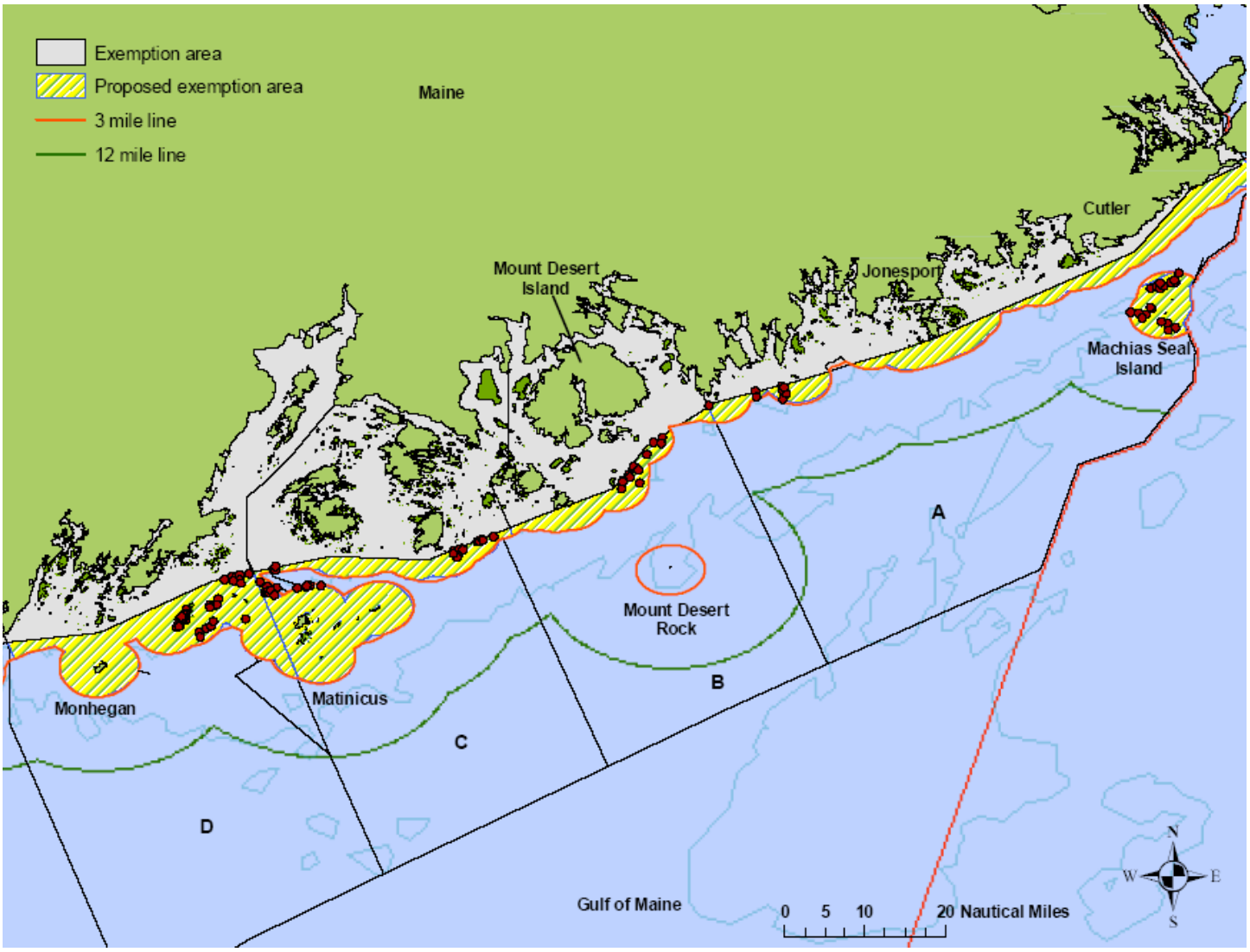

Figure 6. Sea Sampling sites during Aug. for Zones A-C and July for Zone D for years 2001-2002, 2004-2006. Most sites in Zone A occur in the Machias Seal Island three mile line which may potentially skew the configuration in that zone towards longer trawls.

ATTACHMENT 2

Summary of the Questionnaire
Following the July 16, 2008, ALWTRT Maine Subgroup Meeting

SCENARIO ONE: SLIVER AREA ONLY PROPOSAL

This scenario is a trade-off proposal for the sliver areas only that would allow floating groundline in these areas in exchange for reductions in vertical line in these areas. The intention under this scenario is only to take steps to reduce the risk from vertical line as necessary to offset any increased risk through allowing the use of floating groundline in the sliver areas.

(1) Are you willing to consider a proposal that increases the amount of groundline in the water (by allowing floating groundline in sliver areas where sinking line would otherwise be required) offset by a reduction in vertical line in the sliver areas?

☐ **NO**

If no, then a sliver area only proposal cannot go forward – move to question #3. {2 Subgroup members responded NO}

√ **YES** – go to question #2 {6 Subgroup members responded YES}

Not as an even 1-for-1 trade

Looking beyond this particular proposal, I am concerned about exemptions to broad-based gear modification requirements within the Gulf of Maine. These have the potential to reduce plan effectiveness in a region that is known to be important to several endangered whale species for most of the year. Whales make large movements over relatively short time frames and acoustic data show that they can be present in areas where they are not seen, despite the presence of interested and knowledgeable observers, such as whale watching vessels. Until whale movements can be better predicted and detected, it is risky to allow any exemption zones, especially ones within relatively short distances from documented large whale aggregation sites.

That being said, my primary concern at this point is in reducing the amount of rope in the water column—if not by sinking ground line, then by another enforceable means. If it is not possible to fish with sinking ground line in some small areas of the Gulf of Maine, then a comparable or greater reduction in the amount of vertical lines seems like an appropriate trade-off at this time. However, I would want to see a continued effort to develop alternatives to floating ground line that may be approved for use in the near future. As noted below, I would not think that reductions in vertical line now should count toward future vertical line requirements (at least while floating ground line remains in use).

One thing that I consider critical to any exemption proposal is a mechanism to detect any resulting entanglements, to mitigate those effects and to institute appropriate additional gear modifications/closures, if necessary. So, in addition to equal or better alternate risk reduction measures in the exempted area, I would want to see a detailed visual gear marking system (one mark half way along the line is not adequate), an entanglement reporting and response network as well as other indirect methods of detecting interactions. I would also want to see a rapid and adequately conservative trigger prompting further gear modifications or a removal of the exemption (a one strike rule, for example). Basically, I would be looking for assurances that if NMFS were to take this risk that there would be a way to judge the impact and to recover from it.

(2) Are you willing to consider such a trade-off on a **conceptual basis** without data to quantify the overall conservation benefit?

☐ **NO** – A trade-off needs to be justified by quantitative data. If no, then a sliver area only proposal cannot go forward at this time as most of the Subgroup members have already stated they do not consider the current quantitative data acceptable. {3 Subgroup member responded NO, a fourth also said "no" but responded "no" to question #1}

If no, what data would you consider adequate to establish a baseline for effort and gear configuration by area? What is important to consider in an analysis of this data?

Though the "no" answer on question 1 is supposed to obviate additional answers, I want to give some thoughts. There needs to be quantitative risk reduction. The current reporting system in Maine is inadequate. I believe that Maine's current proposal relies on a report that appears quantitative but has such inappropriate assumptions (e.g., that everyone uses 800 traps in all 12 months, that effort in the highest month is the standard by which risk-reduction should be measured, etc) that there needs to be a better system of record keeping such as that used in other states in ASMFC---like Massachusetts.

A proposal that is focused only on the sliver area ignores the data provided by NMFS in summary form at the April 2008 TRT meeting that shows at least 5 whales have become entangled in state waters outside of the sliver waters. Even if the data were available to more accurately quantify the conservation benefit from a reduction in vertical line in the sliver area, the risk to whales is not limited to the sliver area.

Annual recall logs filled out by every lobster permit holder in the state. This log would list the following for each month: Max traps; number of buoylines, number of trips, lobsters caught (similar to MA recall log).

Trap tags are not an accurate reflection of the fishery. Most fishermen I know bought 800 tags to escape further losses through regulatory caps, but few fish that many. Therefore the reductions proposed by the state of Maine are unlikely to be accurate. A lot of the guys fishing in the "sliver, are already fishing lower numbers, and capping endlines at 300 wont make the difference shown here. On the ground gear surveys, more sea sampling, and rigorous trap tag assessments are needed to establish a believable baseline. Then we could talk about reductions with some real numbers.

It is unclear to me how we can move forward on a conceptual basis if the goal is to have a percentage reduction of gear rather than to use alternate materials and technologies to replace existing gear. If the goal is to reduce the amount of line in the water column then we need to know how much is presently in use, and where.

However, as noted above, I would be less concerned about the weaknesses of existing data if there were a reliable means of detecting and responding to entanglements (including by instituting closures) within the sliver zone, and making appropriate adjustments as our knowledge increases. In other words, if we were able to detect all entanglements and make the appropriate modifications instantaneously, then the risks of making a significant mistake would be lower. However, we do not have this even now and the programs and plans for monitoring and contingency discussed thus far would not meet this goal.

Once a baseline is established, how much of a reduction in vertical line is necessary to offset allowing floating groundline in the sliver area? (e.g. 100% (1 mile of vertical line = 1 mile of groundline); 110%,125%,…)

100%

Given that groundline is only the first step in reducing whale entanglements, Maine should make proposals that start to address the vertical line problem in addition to specific reductions only for the proposed sliver area. If Maine had proposed caps of 300 for all state fishermen, this would be a more fruitful discussion.

We do not know the differential risk of floating ground line versus vertical line. It is likely that floating ground line poses a different risk per unit length than vertical line, because it has both a substantial horizontal and vertical component. Thus a 1:1 exchange may not be equivalent in all circumstances, but I feel that any other ratio is purely arbitrary at this stage. With an estimate of the average height and length of floating groundline and the average height and angle of vertical line, someone can probably model the relative risk and use that to develop an objective formula for equivalency. If an equivalency can be established and an exemption is considered, then I would suggest equivalency within the sliver area and any additional conservation benefit be applied elsewhere, as suggested in the holistic plan.

GO TO QUESTION #3

√ **YES** – I am willing to consider a trade-off in the sliver areas on a conceptual (and not strictly quantitative) basis. {3 Subgroup members responded YES}

If yes, what information or rationale would you use to decide if the trade-off was sufficient?

We would need to see the available data analyzed in the "most conservative" conservation way (i.e. to show the minimum, not the maximum possible, benefit for conservation). So far everything has been presented in the months with the most use and with the gear configurations that are most extreme in one direction – we need to see the other.

This is a question of accepting uncertainty in the existing data. This is not really the same as accepting a trade off on a conceptual basis (i.e., its similar to accepting available data suggesting right whales rarely occur in Maine state waters based on very limited survey effort). I would be willing to use accept the 2006 survey database for evaluating trade offs on a ***temporary*** basis provided (1) further analyses are done as were suggested at the Subgroup meeting (e.g., analyzing existing data by month and analyzing confidence limits), (2) a commitment is made to require log book data on the number of traps per endline, the number of endlines, and amount of gear in the water by month, and (3) and the proposal included precautionary factors regarding length of line to be removed to account for possible errors in underestimating baseline amounts of groundline and vertical line.

They are equal.

How would you distinguish between the vertical line reduction necessary to offset allowing floating groundline in the sliver area with the vertical line reduction necessary to demonstrate significant progress in moving forward the vertical line discussion?

You can't necessarily say this before-hand – it depends too much on what is being proposed. But two major considerations here: 1) The levels need to be pre-stated and explicitly clear, and 2) as Sharon stated, a trade-off must involve some clear conservation gain, since fishermen are gaining a benefit in their ease of fishing at a conservation cost. And the amount must be greater than the 1:1 trade-off within the same area that was discussed.

Any amount.

Pending information to the contrary, I would be agree to consider that 1 mile of groundline poses a risk equal to 1 mile of endline but would expect that any proposal focusing explicitly on the sliver area would reduce end line lengths by at least 50%.

GO TO QUESTION #3

SCENARIO TWO: HOLISTIC PROPOSAL

This scenario is a holistic proposal that allows floating groundline in the sliver area and decreases vertical line more broadly in Maine waters both to regain the use of floating groundline in specific areas **and** advance vertical line risk reduction.

(3) Are you willing to consider a proposal that increases the amount of groundline in the water (by allowing floating groundline in sliver areas where sinking line would otherwise be required) offset by a reduction in vertical line throughout Maine waters?

☐ **NO** {1 Subgroup member responded NO}

If no, what alternative action do you suggest to offset increased risk from allowing floating groundline in sliver areas?

If there is no alternative action identified, then there would not be anything for Maine to consider and therefore no option for a holistic proposal. **You have completed the questionnaire** – if you have any thoughts on the remaining questions feel free to enter them.

I would be willing to reconsider groundline in the water column, if Maine were willing to start annually ratcheting down caps on endlines in all state fisheries, with a long term goal (say ten years) of no endlines.

A holistic proposal will consider the entire fishery, not just the sliver proposed for exemption. Of the five right whales entangled in Maine lobster gear, I believe 3 of them were well within the state waters. Maine has done nothing to address the inevitability of those events, and they will therefore happen again.

√ **YES** Go to question #4 {7 Subgroup members responded YES}

I am willing to consider a limited increase in the amount of groundline in the sliver area (but not in federal waters), offset by a reduction in both vertical line and groundline throughout state waters.

See my general concerns and specific caveats above about allowing exemptions within the Gulf of Maine. If an exemption of some kind were to move forward, I believe I would prefer the holistic approach over the sliver only, provided that there were at least equivalencies within the sliver zone itself.

(4) Are you willing to consider such a trade-off on a **conceptual basis** without data to quantify the overall conservation benefit?

☐ **NO** – A trade-off needs to be justified by quantitative data. If no, then a holistic proposal cannot go forward at this time as most Subgroup members have already stated they do not consider the current quantitative data acceptable. The subquestions below, therefore, only provide information to help NMFS and the ALWTRT move forward more generally on vertical line risk reduction. {4 Subgroup members responded NO}

If no, what data would you consider adequate to establish a baseline for effort and gear configuration by area? What is important to consider in an analysis of this data?

The studies done by Maine do not consider a realistic sampling of fishermen (i.e., there needs to be a reliable sample of state-only licensed fishermen). Further, it is important to understand how endline use relates to the configuration of pots (e.g.) is there a tendency to use 2 endlines in any configuration of 2 or more traps? Only in 3 or more? 4 or more? A reporting system that results in a data set similar to that of Massachusetts and other ASMFC lobster management states, that accounts for latent effort, and allows reliable data query would provide a greater measure of comfort.

Annual recall logs filled out by every lobster permit holder in the state. This log would list the following for each month: Max traps; number of buoylines, number of trips, lobsters caught (similar to MA recall log).

Independently collected and verified data on the characteristics of the fishery by zone, depth, and bottom type. String length, number of traps, endlines, and marking characteristics need to be well documented. I would suggest that at least 10% of each zone needs to be sampled to have any confidence in the findings. Further, a method to account for trap tags not being fished is needed, and it needs to be verified.

See comments under the Scenario One, above.

How much is necessary to compensate for allowing floating line in the sliver areas (e.g. 100% (1 mile of vertical line = 1 mile of groundline); 110%,125%,…)?

As stated in the meeting, there should be a reduction of close to 50% of the endlines to exchange for allowing floating groundline.

100%

This is not a holistic approach. A holistic approach will consider reducing all lines systematically across the fishery. Trading one sort of line for another does not advance the conservation of right whales. Only reductions will.

See comments under the Scenario One, above.

Separate from the sliver trade-off, how much additional is required for vertical line risk reduction (e.g. 10%, 25%, 50%)

The answer above is relevant here.

I suggest a two pronged approach – 1) all lobster fishermen should be faced with a schedule of endline caps that will continuously ratchet downward over known period, say ten years, toward a goal of zero. Alternatively, block out a few ropeless fishing zones, then provide fishermen with grants and incentives (whale safe marketing) for those who figure out how to fish in those zones.

The problem is that we have very little specific information on risk, and so the greater vertical line reduction offered, the greater my comfort will be. I don't feel that I have an objective way to answer this question.

Should there be one risk reduction target or multiple targets? If multiple targets, what factors do you suggest be considered to determine the appropriate target (density of animals, density of gear, etc.)?

The use of sightings data no more recent than 2005 skews understanding of whale habitat use and these data were used by NMFS to declare that exempting 71% of Maine state waters was somehow "risk averse." Since we do not know risk on a quantitative basis (e.g., risk of 1 whale in 500 endlines in a 20 mile radius, versus 1 whale in 50 endlines in a 20 mile radius, etc) It is hard to use a risk matrix such as would be needed for considering multiple factors.

Multiple targets depending on expected density of large whales.

The only way to determine whether anything is effective is to implement serious gear marking. Look at the rope lengths taken off entanglements, figure out the minimum length collected, and require gear marking regularly at that distance. Then entanglement data will show whether any Maine gear is involved. The target should be 0 fatal entanglements in Maine gear.

I assume that this refers to any additional line reduction. This warrants a great deal more thought, but I would suggest that the majority of the reduction (perhaps 75%) be in areas where there is overlapping high densities of whales and gear. However, there is likely risk to whales in lower density areas as well and so I would suggest that some reduction in all areas with gear in use or documented whale presence, regardless of density. It is not clear to me how well area-specific reductions can be employed and enforced, but this is outside of my area of expertise.

√ **YES** – I am willing to consider a trade-off on a conceptual (and not strictly quantitative) basis. {4 Subgroup members responded YES}

If yes, what information or rationale would you use to decide if the trade-off was sufficient (e.g. relative density of gear in the area affected, relative density of whales in the area affected)?

Given the lack of good data on gear, I would need to consider both the analysis presented as described on P 3, Q 1 above, and 2) the best available data on whale use. Risk is a function of whales x gear, so if the gear is imprecise, the knowledge of whales will help assess what the risk between areas may be.

As above, I would be willing to accept uncertainty in the current database (i.e. the 2006 survey) on a ***temporary, short-term*** basis contingent upon a commitment to require statewide collection of log book data on number of pots per endline, number of endlines, and amount of time gear is in the water on a monthly basis.

Although quantitative data are lacking on the number of groundlines and vertical lines in the water, the state has mechanisms to reduce the amount of gear in the water. These mechanisms include reducing the number of trap tags sold, reducing the number of permits issued, and reducing the number of traps in the water. If the state were to implement a 25-50% reduction in gear through one of these mechanisms, we would also need adequate controls to ensure that reductions are actually achieved. Regardless, Maine must initiate a more rigorous data collection system to gather information on gear configuration as a condition of any alternative to sinking line considered by the ALWTRT.

Percentage of type of rope in the water.

How would you distinguish between the vertical line reduction necessary to offset allowing floating groundline in the sliver area with the vertical line reduction necessary to demonstrate significant progress in moving forward the vertical line discussion?

You can't necessarily say this before-hand – it depends too much on what is being proposed. But two major considerations here: 1) The levels need to be pre-stated and explicitly clear, and 2) as Sharon stated, a trade-off must involve some clear conservation gain, since fishermen are gaining a benefit in their ease of fishing at a conservation cost. However, I would be more willing to accept a trade closer to 1:1 (e.g. maybe 1.25:1) if I know the further reduction takes place in an area with higher known whale use.

Pending information to the contrary, I would agree to consider the entanglement risk of 1 mile of floating groundline equal to 1 mile of endline.

We need to move away from looking solely at vertical line reductions, and think about reducing risk from both groundlines and vertical lines, in an integrated manner. When we focus on reducing only groundlines or only vertical lines, we may cause unanticipated consequences, as happened with sinking groundline. We should instead think about strategies that reduce whole gear systems. That said, a proposal that aims to reduce vertical lines only in the sliver area is problematic and does not represent an overall vertical line solution because the borders of the sliver area are arbitrary and fishermen move between these areas.

We know that there are "holes" in the data. Large whales get caught primarily in vertical lines. Any amount in the reduction of the number of vertical lines would be beneficial to the whales.

GO TO QUESTION #5

(5) If Maine were to implement a holistic plan in its waters, would you support a 5 year grace period during which time they would not be required to take additional risk reduction action?

√ **NO**, I would not support a 5 year grace period {5 Subgroup members responded NO}

If no, do you have any suggestions for an alternative way to provide Maine with compensation/assurances to encourage them to take this additional step at this time to reduce risk associated with vertical line?

If no assurances are provided to Maine, they have indicated that they will not pursue a holistic proposal at this time and will instead deal with vertical line risk reduction through the regular ALWTRT process. **You have completed the questionnaire.**

No. Conservation advocates are taking on faith that their proposed line reductions will be meaningful risk reduction for whales when we actually know little about the relative risk and DO know that there are a disproportionate number of whales being entangled in Maine state gear (according to data given the ALWTRT) and we are taking on faith that it will be enforceable and enforced. They need to have faith their own plan works. And it is illegal for NMFS to promise not to amend RPAs in the plan.

I cannot agree to accept a 5 year grace period without knowing what is proposal is and without considering other options (e.g. a contingency plan). My first choice would be to accept a proposal subject to a contingency action. As noted in comments on the meeting outcome, I do not agree that contingency measures are less workable that an 5 year grace period.

No whales will likely be caught. This is a good thing for the whales. I liked the initial proposal. Perhaps all should be calculated on a monthly basis rather than using the heaviest month fished. Maybe you should analyze the data with only the state permit holders (as opposed to the state permit holders and the federal lobstermen permit holders.

Perhaps I am misunderstanding the holistic plan (and the grace period concept), but any reductions in vertical lines that are deemed necessary now for an exemption should not count towards future vertical line modifications or reductions—at least not while floating ground lines remain in use. However, if development continues on other technologies or low profile line then perhaps there will be an approved alternative for floating ground line by the time that vertical line modifications become required. If floating ground line is ultimately replaced, then I would think that current reductions in vertical line could very well count toward future requirements. Furthermore, any proactive actions, above what NMFS considers necessary for an exemption, should also count toward future requirements. This is an area where again I think the baseline data will be important for management purposes.

☐ **YES**, I would support a 5 year grace period {3 Subgroup members responded YES}

If yes, do you have any suggestions for what would happen during the grace period if gear from an entangled whale was traced back to Maine waters and/or what actions should be taken during the 5 year period to gather information to help inform any additional management action at the end of the grace period?

There must be a strong marking system and research effort in place so that five years down the road our understanding of interactions with whales and Maine gear as it is configured under an agreed-upon compromise can be assessed as to whether additional restrictions are necessary, and (if so) what parts of the gear AND IN WHAT AREAS further restrictions may be necessary. Maine should also keep up its data collection efforts, assisted by a panel of independent experts, to increase our knowledge of whale use of their habitats so we can make better informed decisions about where (both horizontally and vertically) whales are at most risk.

I do not think it is reasonable for the industry to ask NMFS to promise something that it legally cannot….and then to tell us that there is no point in giving feedback on a risk reduction plan for Maine if we will not support what appears to be a request for an unreasonable "assurance."

Rather than a grace period *per se*, I would support a 3 year period in which additional gear requirements may not necessarily be implemented for Maine state waters, IF:
-Disentanglement efforts are increased in all New England waters
-Aerial survey efforts are increased in Maine waters
-More extensive gear marking requirements are implemented
-A rigorous and more fine scale (monthly rather annual) data collection system is implemented to gather information on effort (including latent effort) and gear configuration (number of traps set, number of traps per endline)
-The process for identifying disentangled gear is accelerated and involves a more participatory mechanism involving all stakeholders
-Annual reports are available from (1) state on gear configuration and (2) NMFS on origin of any gear removed from whales, 3 months after the end of the year.

Require marking of all groundlines to allow identification of fishermen, zone, and state. "An entangled whale" could include any of the four species and include non-lethal entanglements. It will take 5 years to determine if the rate of encounters is reduced.

Go to Question #6

(6) If Maine were to consider developing a holistic proposal, what do you see as essential components in that proposal?

a. Areas to be covered

1) Recognition that entanglements can happen in any area – including those currently exempted – and that accounted for in marking/research plans for all three areas – exempted state waters, sliver, and out to the 50 fm curve.
2) Most important vertical line restrictions in the area between the sliver and the 50 fm curve.

A holistic proposal would need to encompass line reductions throughout Maine's waters, including currently exempted areas.

All state waters beyond a quarter mile of shore.

The proposal shall apply to all state waters, except waters landward of COLREGS (or equivalent) line. Federal waters shall remain subject to the sinking line requirement.

1. All state lobster fishermen;
2. Reliable independently verified data on the characteristics of the fishery;
3. Better data on the characteristics of the behavior of groundlines in high tidal zones, especially during slack tides;
4. Independently verifiable models on various risk reduction scenarios; and
5. Analysis and consequences of rare events (e.g., a right whale in Casco Bay)

b. Measures to be included

- Bans on singles
- Meaningful restrictions on end lines when evaluated against the best available data most conservatively analyzed (from a conservation point of view)
- Marking on all end lines and ground lines in all three zones from the shore to the 50 fm curve to best understand entanglements wherever they occur.

A reliable and representative reporting system, similar to that in Mass. and other states in ASMFC. This should include accounting for latent effort and identify gear configurations and differences in these (and effort) in state-only versus federally permitted fishermen.

Strict enforcement --at the meeting, Maine's law enforcement personnel indicated a misunderstanding (and thus non-enforcement) of the requirement that fishermen remove non-compliant gear during DAMs in Maine, and this is not acceptable.

A close to 50% reduction in vertical lines (accomplished through trap reductions or restrictions on endline use or other measures). This should be statewide and not just in "the sliver."

(1) A commitment to immediately (within one year) institute a requirement for collecting log book data on the number of traps per endline, the number of endlines, and the amount of time gear is in the water by month.
(2) A commitment to reassess the validity of conservation benefit estimates based on the 2006 survey after the first year of log book data is collected. If new data indicates conservation benefits of proposed action were underestimated based on 2006 survey ***or*** the estimates used by NMFS in its EIS, revise regulatory requirements based on new data.
(3) Require either the number of lobster trap licenses or the miles line in the water column by 25% statewide. Limits on trap licenses or endlines must be reduced proportionally by all Maine fishermen (e.g., for each fishermen with permits for more than 25 traps or a calculated number of endlines based on trap licenses for each fishermen)

Statewide reduction in the amount of gear set, to reduce both vertical lines and groundlines. If implemented as trap reductions, initially 25% reduction in number of traps each fisherman can set, increasing to 50% after 5 years.
-To ensure that fishermen that currently fish less traps do not increase effort, trap reductions should be applied proportionately across the state based on current effort (as determined by the number of trap tags sold to each fishermen). Fishermen fishing 800 would go to 600, fishermen fishing 600 would go to 450, fishermen fishing 400 would go to 300, etc.
Other effort controls that would be needed to have trap reductions work as a whale risk reduction strategy:
- Endline cap of 300 vertical lines
- Elimination of latent effort in the fishery (no trap tags issued to fishermen that had no landings in the last year or two)
- No additional permits issued for 2-3 years
- Strong enforcement
- Seasonal area closures in high risk areas (e.g., around Mt. Desert Island).

1) Mandatory reporting to allow accurate accounting.
2) Effective gear marking to allow gear to be identified to state.

Note: Reports must be signed under pains of perjury and resulting suspension/revocation for miss-reporting.

1. Steadily reducing endline caps over time;
2. Groundline marking every 30 feet and endline marking every 30 feet (different than groundlines);
3. Continued research into zero risk groundlines with a goal of implementing same in 5 years;
4. Research into ropeless fishing gear, to be tested in designated experimental areas within state waters, with appropriate incentives, fishermen's grants, and independent peer review; and
5. Annual review of activities, findings, and progress with TRT.

c. Other

- Analyses of conservation benefits should include a factor to account for latent fishing (i.e., permits that are not fished)
- Proposals should include conservation factor to account for uncertainty in 2006 survey data.

The following measures should be implemented as part of any gear-based strategy to reduce risk to whales:
-Disentanglement efforts are increased in all New England waters
-Aerial survey efforts are increased in Maine state waters
-More extensive gear marking requirements are implemented
-A rigorous and more fine scale data collection system is implemented by the state to gather information on effort and gear configuration (see above)
-The process for identifying gear removed from entangled whales is accelerated and involves a more participatory mechanism involving all stakeholders
-Annual reports on removed gear are publicly available 3 months after the end of the year, as well as summary information on all gear investigations.

Additional Comments:

We have a rapidly closing window of opportunity to keep an alternative proposal moving. Trap reductions or any other gear reduction effort would obviously take time to implement, as it would have to be implemented by, or in close coordination with, state legislative authority. I am concerned that this would result in Maine asking for further delays in implementation of whale protection measures beyond April 2009, which is unacceptable. If further delays are being contemplated in order to implement a long term strategy with greater conservation benefit, as described above, NMFS and/or the state should reinstitute DAMs or some other similar measure that involved close monitoring of whale movements in nearshore waters with resulting management measures where and when aggregations are seen during the interim time period.